

HP MSR 93X Routers

Installation Guide

Part number: 5998-6569

Document version: 6W103-20140813



Legal and notice information

© Copyright 2014 Hewlett-Packard Development Company, L.P.

No part of this documentation may be reproduced or transmitted in any form or by any means without prior written consent of Hewlett-Packard Development Company, L.P.

The information contained herein is subject to change without notice.

HEWLETT-PACKARD COMPANY MAKES NO WARRANTY OF ANY KIND WITH REGARD TO THIS MATERIAL, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Hewlett-Packard shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Contents

Preparing for installation	1
Safety recommendations	1
Site requirements	2
ESD prevention	2
EMI	3
Lightning protection	3
Installation accessories	3
Pre-installation checklist	4
Installing the router	5
Installation prerequisites	5
Installation flowchart	5
Installing the router	6
Mounting the router on a workbench	6
Installing the router on a wall	7
Grounding the router	8
Installing a standard 3G SIM card	9
Installing a 3G antenna	11
Installing WLAN antennas	13
Installing a standard 4G SIM card	13
Installing a 4G antenna	16
Installing a 3G/4G antenna extender cable to a 4G device	16
Installing a GPS antenna	17
JG704A router antenna installation instructions	17
Connecting interface cables	18
Connecting the console cable and setting terminal parameters	19
Setting console terminal parameters	19
Connecting the power adapter	22
Verifying the installation	23
Powering on the router	23
Startup process	23
Power-on check	24
Configuring basic settings for the router	25
Troubleshooting	26
Power supply failure	26
System configuration problems	26
No terminal display	26
Garbled terminal display	26
No response from the serial port	27
Password loss	27
User password loss	27
Super password loss	27
3G/4G SIM card and 3G/4G antenna failures	28
Restoring the factory settings	28
Scenario 1	28
Scenario 2	29
Scenario 3	29
Reset button usage guidelines	29

Appendix A Chassis views and technical specifications	30
Chassis views	30
JG511A	30
JG512A	31
JH012A	31
JG513A	32
JG514A	33
JG515A	33
JG531A	34
JG516A	35
JG517A	35
JG518A	36
JG519A	37
JH013A	37
JG520A	38
JG596A	39
JG665A	39
JG704A	40
JG597A	41
Technical specifications	41
Antenna specifications	43
Appendix B LEDs	45
LEDs	45
JG511A	45
JG512A	45
JH012A	46
JG513A	47
JG514A	47
JG515A	48
JG531A	49
JG516A	49
JG517A	50
JG518A	51
JG519A	51
JH013A	52
JG520A	53
JG596A	53
JG665A	54
JG704A	55
JG597A	55
LED description	56
Support and other resources	59
Contacting HP	59
Subscription service	59
Related information	59
Documents	59
Websites	59
Conventions	60
Index	62

Preparing for installation

Table 1 HP MSR93X router models

Product code	HP description	RMN
JG511A	HP MSR930 Router	BJNGA-BB0015
JG513A	HP MSR930 3G Router	BJNGA-BB0016
JG514A	HP MSR931 Router	BJNGA-BB0017
JG515A	HP MSR931 3G Router	BJNGA-BB0018
JG531A	HP MSR931 Dual 3G Router	BJNGA-BB0019
JG512A	HP MSR930 Wireless Router	BJNGA-BB0020
JH012A	HP MSR930 Wireless Router (NA)	BJNGA-BB0020
JG516A	HP MSR933 Router	BJNGA-BB0021
JG517A	HP MSR933 3G Router	BJNGA-BB0022
JG518A	HP MSR935 Router	BJNGA-BB0023
JG519A	HP MSR935 Wireless Router	BJNGA-BB0024
JH013A	HP MSR935 Wireless Router (NA)	BJNGA-BB0024
JG520A	HP MSR935 3G Router	BJNGA-BB0025
JG596A	HP MSR930 4G LTE/3G CDMA Router	BJNGA-BB0026
JG665A	HP MSR930 4G LTE/3G WCDMA Router	BJNGA-BB0027
JG704A	HP MSR930 4G LTE/3G WCDMA ATT Router	BJNGA-BB0033
JG597A	HP MSR936 Wireless Router	BJNGA-BB0028

Safety recommendations



WARNING!

Before installation and operation, read all the safety instructions in the compliance and safety guide for your router.

Follow these general safety recommendations:

- Turn off all power and remove all power cables before opening the chassis.
- Unplug all power and external cables before moving the chassis.
- Before installation, locate the emergency power switch so that you can shut off power immediately if necessary.
- Always wear an ESD wrist strap when installing the router.
- Do not stare into an open optical interface. The light can cause permanent eye damage.
- Use a good grounding system. This is essential for reliable operation.

- Confirm that the resistance between the chassis and the ground is less than 1 ohm.

Site requirements

The router can only be used indoors.

This section provides information about temperature, humidity, cleanness, and air quality requirements, as well as rack-mounting requirements and protection against damage from lightning and EMI.

Table 2 Temperature and humidity requirements

Temperature	Relative humidity
0°C to 40°C (32°F to 104°F)	5% to 90%

Table 3 Dust concentration limit in the equipment room

Substance	Concentration limit (particles/m ³)
Dust particles	$\leq 3 \times 10^4$ (No visible dust on desk in three days)

NOTE:

Dust particle diameter $\geq 5 \mu\text{m}$

Table 4 Harmful gas concentration limits

Gas	Max. (mg/m ³)
SO ₂	0.2
H ₂ S	0.006
NH ₃	0.05
Cl ₂	0.01

To prevent overheating:

- Provide adequate clearance for air flow, including at least 10 cm (3.94 in) ventilation space around the router's air intake and outlet vents.
- Make sure the site has an adequate cooling system.

ESD prevention

To prevent the electronic components from being damaged by ESD, follow these guidelines:

- The equipment and floor are correctly grounded.
- The equipment room is dust-controlled.
- Wear an ESD wrist strap when inspecting or handling a circuit board.

To attach an ESD wrist strap:

1. Wear the wrist strap on your wrist.
No wrist strap is supplied with the router. Prepare it yourself.
2. Lock the wrist strap tight around your wrist to keep good contact with the skin.
3. Insert the ESD plug into the ESD socket in the chassis.

4. Attach the alligator to the chassis.

**IMPORTANT:**

Check the resistance of the ESD wrist strap for safety. The resistance reading should be in the range of 1 to 10 megohm (Mohm) between human body and the ground.

EMI

EMI from any source adversely affects the router.

To prevent EMI:

- Use electromagnetic shielding when necessary.
- Take measures against interference from the power grid.
- Position the router as far as possible from any power source's grounding equipment or light-prevention equipment.
- Position the router as far as possible from radio transmitters, radar, and all high-voltage or high-frequency equipment.

Lightning protection

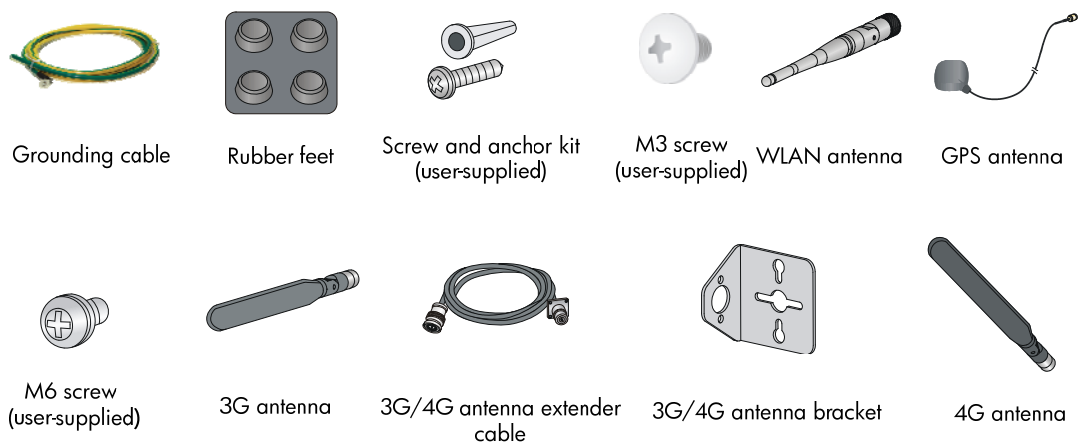
To protect the router from lightning:

- Make sure the grounding cable of the chassis is grounded correctly.
- Make sure the grounding terminal of the AC power receptacle is grounded correctly.
- Install a lightning arrester at the input end of the power supply.

Installation accessories

Figure 1 lists the installation accessories for the router.

Figure 1 Installation accessories

**NOTE:**

The type of the antenna that comes with the router depends on the router model.

Pre-installation checklist

Item	Requirements	Yes	No
Installation site	Ventilation	<ul style="list-style-type: none">There is a minimum clearance of 10 cm (3.9 in) around the router chassis intake and exhaust vents for heat dissipation.The installation site ventilation system is adequate.	
	Temperature	0°C to 40°C (32°F to 104°F)	
	Relative humidity	5% to 90% (noncondensing)	
	Cleanness	Dust concentration $\leq 3 \times 10^4$ particles/m ³	
	ESD prevention	<ul style="list-style-type: none">The equipment and floor are correctly grounded.The equipment room is dust-controlled.Humidity and temperature are maintained at acceptable levels.Wear an ESD wrist strap when inspecting or handling a circuit board.	
	EMI prevention	<ul style="list-style-type: none">Take measures to protect the power system from the power grid system.Keep the protection ground of the router as far away from the grounding device or lightning protection grounding device as possible.Keep the router far away from radio transmitters, radar, and high-frequency or high-voltage devices.Use electromagnetic shielding when necessary.	
	Lightning protection	<ul style="list-style-type: none">The grounding cable of the chassis is grounded correctly.The grounding terminal of the AC power receptacle is grounded correctly.A port lightning arrester is installed. (Optional.)A power lightning arrester is installed. (Optional.)A signal lightning arrester is installed at the input end of an external signal cable. (Optional.)	
	Electricity safety	<ul style="list-style-type: none">Install a UPS.In case of emergency during operation, switch off the external power switch.	
	Workbench	<ul style="list-style-type: none">The workbench is stable.The workbench is grounded correctly.	
	Safety precautions	<ul style="list-style-type: none">The router is far away from any sources of heat or moisture.The emergency power switch in the equipment room is identified and accessible.	
Installation accessories and tools	<ul style="list-style-type: none">Installation accessories supplied with the router are ready.User-supplied accessories and tools are ready.		
Reference	<ul style="list-style-type: none">Documents shipped with the router are available.Online documents are available.		

Installing the router



WARNING!

To avoid injury, do not touch bare wires, terminals, or parts with high-voltage hazard signs.



IMPORTANT:

- The barcode on the router chassis contains product information that must be provided to HP Support before you return a faulty router for service.
 - Keep the tamper-proof seal on a mounting screw on the chassis cover intact, and if you want to open the chassis, contact HP for permission. Otherwise, HP shall not be liable for any consequence.
-

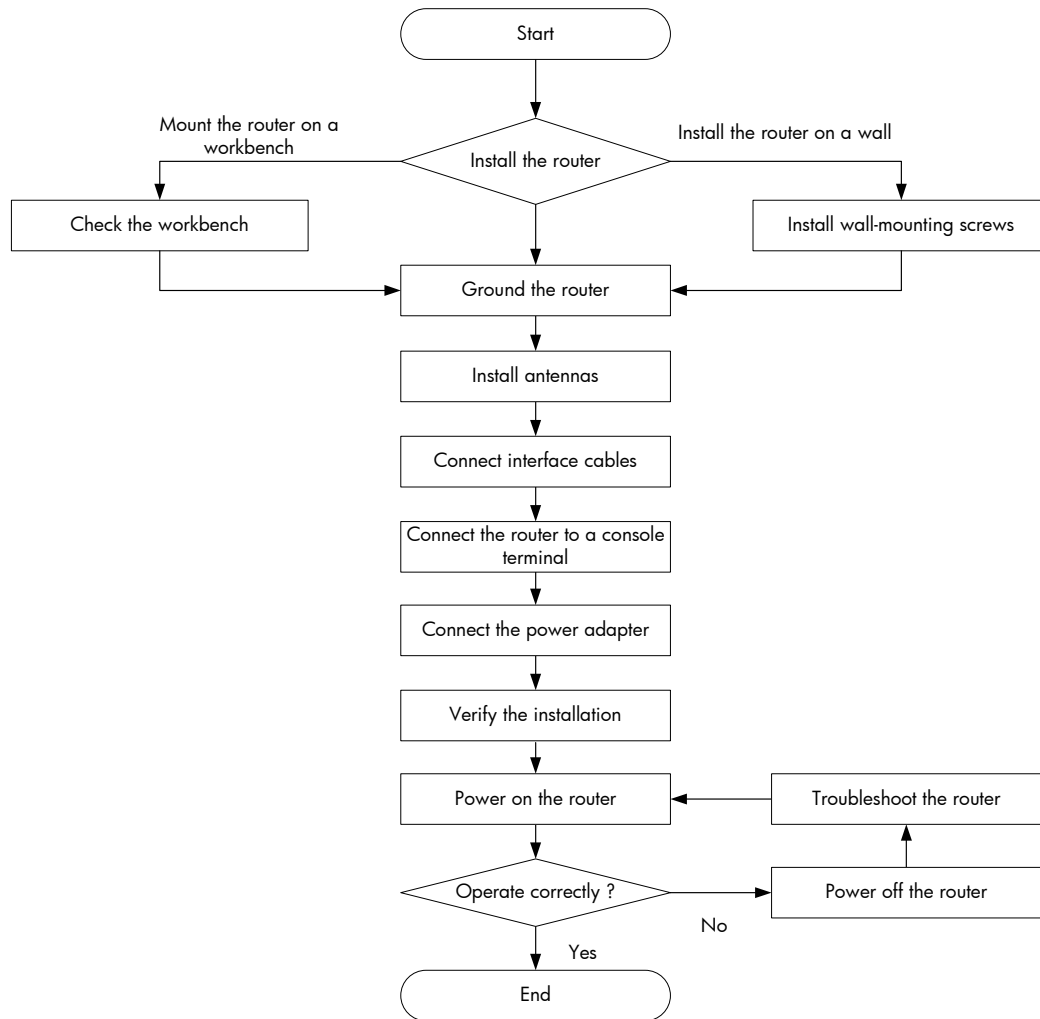
Installation prerequisites

- You have read "[Preparing for installation](#)" carefully.
- All requirements in "[Preparing for installation](#)" are met.

Installation flowchart

You can install the router on a workbench or on a wall. Select an installation method according to the installation environment, and follow the installation flowchart shown in [Figure 2](#).

Figure 2 Installation flowchart



Installing the router

Mounting the router on a workbench

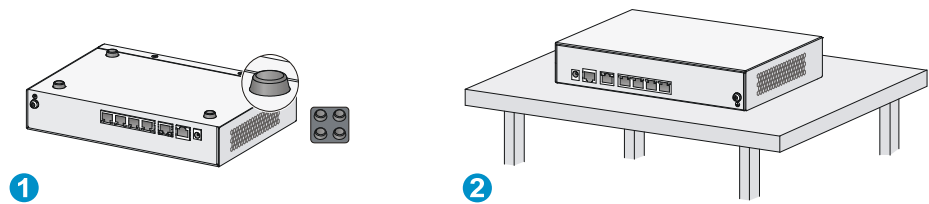
ⓘ **IMPORTANT:**

- Ensure good ventilation and 10 cm (3.9 in) of clearance around the chassis for heat dissipation.
 - Avoid placing heavy objects on the router.
-

To mount the router on a workbench:

1. Make sure the workbench is clean, stable, and correctly grounded.
2. Place the router upside down on the workbench and attach the rubber feet to the four round holes in the chassis bottom.

Figure 3 Mounting the router on a workbench



Installing the router on a wall

CAUTION: When mounting the router on a wall, position the router so the network interfaces face downwards, and the sides with ventilation openings are perpendicular to the ground, as shown in [Figure 4](#).

To mount the router on a wall:

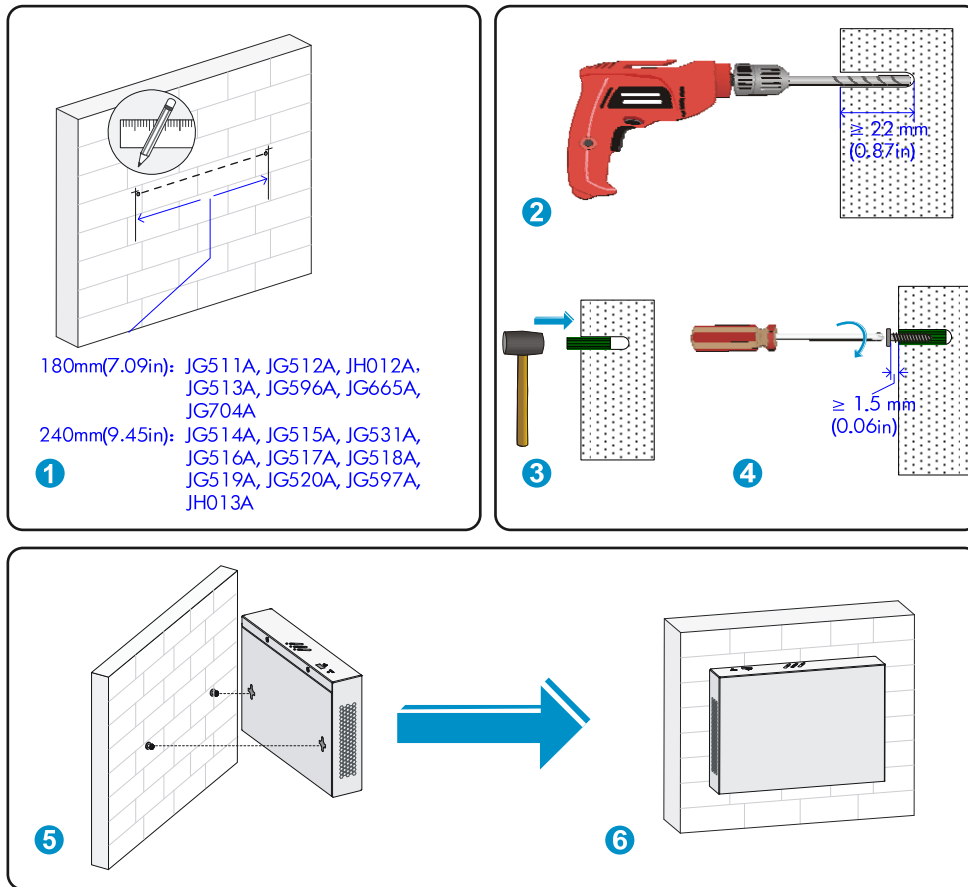
1. Mark the locations of the two mounting holes on the wall with the separations listed as follows:

Router model	Separation
JG511A, JG512A, JH012A, JG513A, JG596A, JG665A, and JG704A	180 mm (7.09 in)
JG514A, JG515A, JG531A, JG516A, JG517A, JG518A, JG519A, JH013A, JG520A, and JG597A	240 mm (9.45 in)

The holes must be level (on the same horizontal line).

2. Drill two holes in the wall.
3. Following the marks, drill the two holes at least 22 mm (0.87 in) deep.
Verify that the holes are level.
4. Insert an anchor into each hole so it is flush with the wall surface.
5. Drive a screw into each anchor, keeping the screw heads protruding at least 1.5 mm (0.06 in) from the wall.
6. Hang the router on the screws.

Figure 4 Wall-mounting the router



Grounding the router



WARNING!

Connecting the router grounding cable correctly is crucial for protecting the router from lightning and EMI.

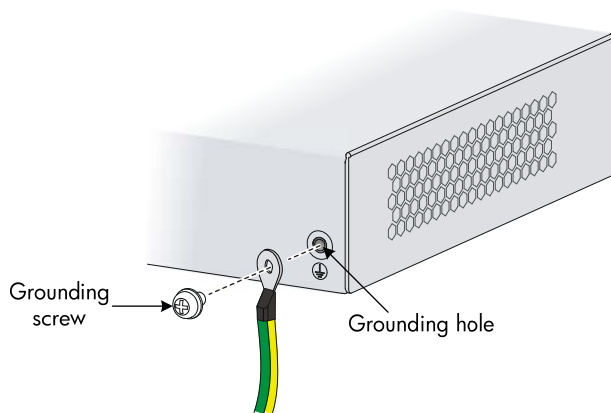
Make sure the grounding resistance is less than 5 ohms.

You can ground the router with a grounding strip or to a buried grounding conductor.

Grounding the router with a grounding strip

1. Remove the grounding screw from the router chassis.
2. Put the ring terminal of the grounding cable on the grounding screw.
3. Use a screwdriver to fasten the grounding screw.
4. Attach the other end of the grounding cable to the grounding strip.

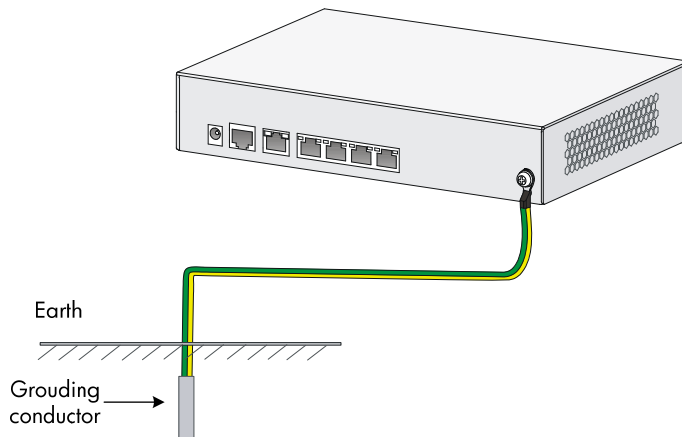
Figure 5 Connecting the grounding cable to the router



Grounding the router to a buried grounding conductor

If the installation site has no grounding strips but offers the option of grounding to earth, hammer a 0.5 m (1.64 ft) or longer angle iron or steel tube into the earth to serve as a grounding conductor, as shown in Figure 6.

Figure 6 Grounding to a conductor buried in the earth



Installing a standard 3G SIM card

CAUTION:

- Do not install or remove a standard 3G SIM card when the router is powered on.
- To avoid damage to the holder, do not use excessive strength when you install the standard 3G SIM card.

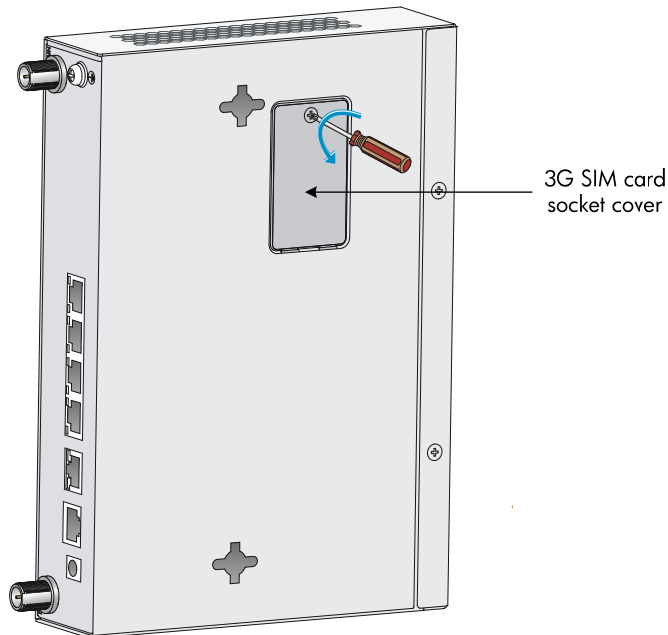
The HP MSR93X routers support the following frequency ranges:

- **3G**—800/850/900/1900/2100 MHz WCDMA/HSDPA/HSUPA/HSPA+
- **2G**—850/900/1800/1900 MHz GSM/GPRS/EGPRS

To install a standard 3G SIM card:

1. Use a screwdriver to loosen the screws on the 3G SIM card socket cover on the bottom of the chassis, and remove the cover.

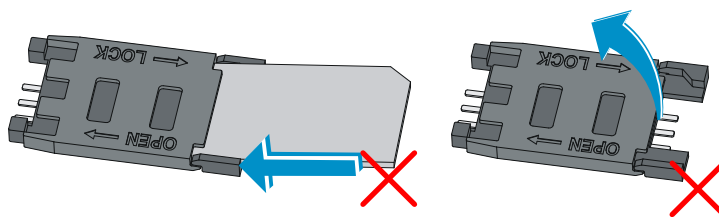
Figure 7 Removing the 3G SIM card socket cover



2. Push the 3G SIM card holder in the direction marked "**OPEN**" so the holder projects upwards. Do not directly insert the standard 3G SIM card into the holder, or lift the holder.

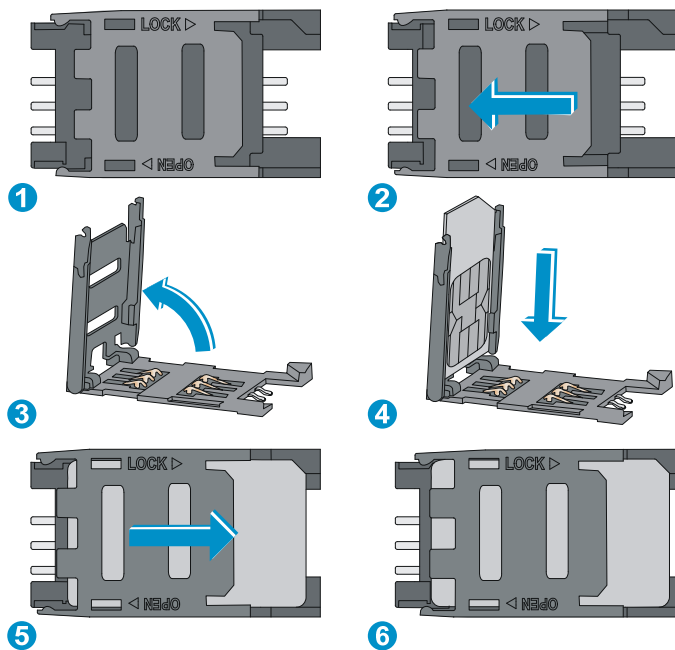
Figure 8 illustrates the wrong installation methods.

Figure 8 Wrong installation methods



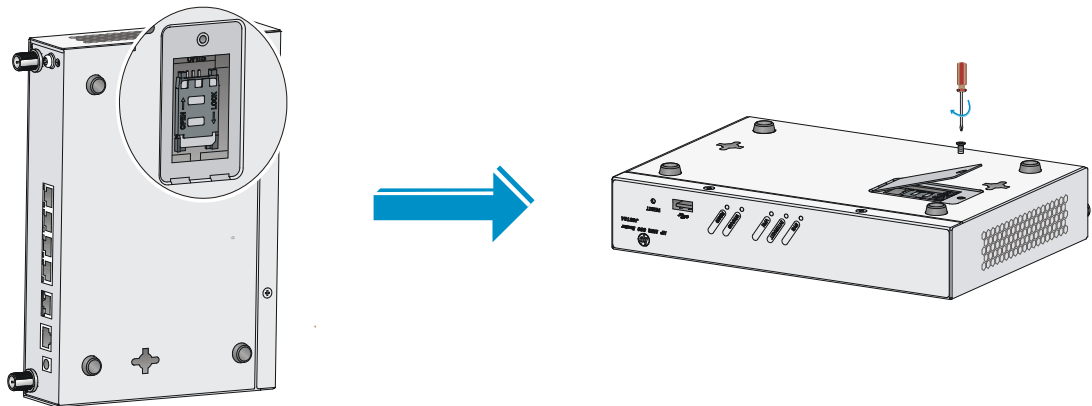
3. Insert the standard 3G SIM card along the slide rails to the holder.
4. Put down the holder and push the holder in the direction marked "**LOCK**" to lock the card in position.

Figure 9 Installing the standard 3G SIM card



5. Position the socket cover and use a screwdriver to fasten the screws on the cover.

Figure 10 Installing the cover

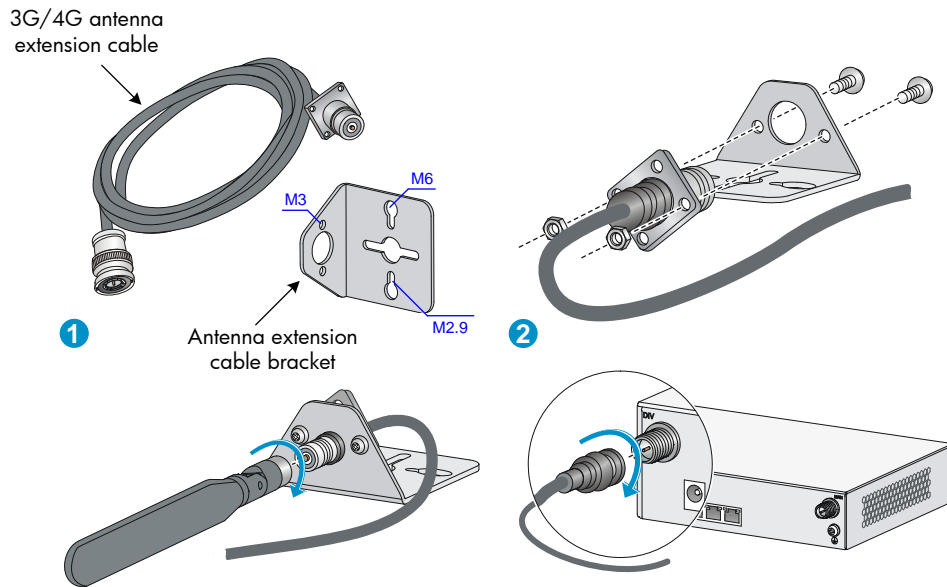


Installing a 3G antenna

To install a 3G antenna:

1. Thread the male connector of the 3G cable through the hole on the bracket, and use screws (from behind the bracket) to secure the male connector to the bracket.
2. Change the angle of the antenna orientation from vertical to horizontal.
3. Attach the antenna to the male connector of the cable.
4. Attach the female connector of the cable to the router.

Figure 11 Installing a 3G antenna



NOTE:

- A 3G module is provided with a 3G antenna and a 3G extender cable. Connect the 3G antenna to the port marked "**MAIN**" by using the 3G extender cable. Ensure a minimum of 25 cm (9.84 in) distance between the 3G antenna and the chassis and between the 3G antenna and any other antenna installed on or connected to the router.
- When a second 3G antenna is required, purchase the other 3G antenna and 3G extender cable yourself. Attach the second 3G antenna to the port marked "**DIV**" if no antennas are installed on the router or connect the second 3G antenna to the port marked "**DIV**" by using the 3G extender cable if the router has antennas installed. Ensure a minimum of 25 cm (9.84 in) distance between the 3G antenna (when the extender cable is used) and the chassis and between the 3G antenna and any other antenna installed on or connected to the router.

Table 5 lists HP extender cables. You can use HP extender cables, but HP is not liable for any consequences caused thereby.

Table 5 3G extender cables

J Number	Extender Cable
JG522A	HP MSR 2.8m Extender Cable
JG666A	HP MSR 6m Extender Cable
JG667A	HP MSR 15m Extender Cable

On a dual-3G JG531A router, the 3G SIM1 and 3G SIM2 cards are associated with the two antenna connectors on the front and rear panels, respectively. Make sure you install the antennas at the correct positions.

Figure 12 SIM card locations on a dual-3G JG531A router

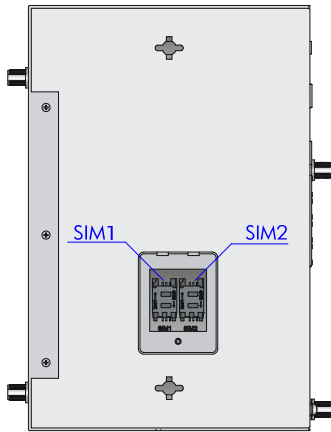
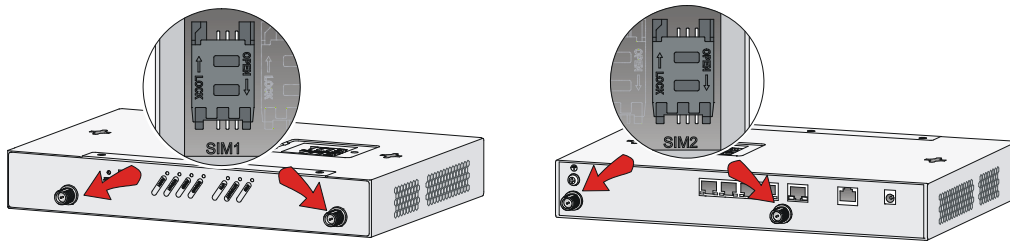


Figure 13 SIM cards and antenna connectors

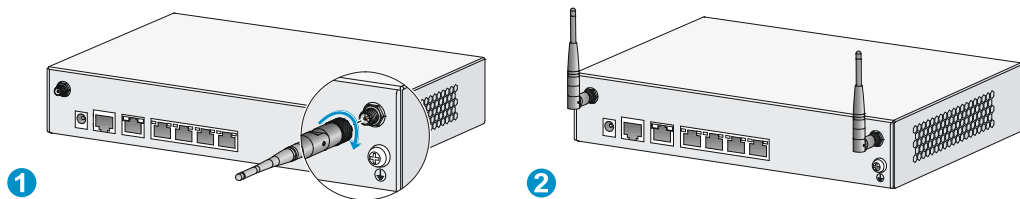


Installing WLAN antennas

1. Change the angle of the antenna orientation from vertical to horizontal.
2. Attach the antenna to the router, as shown in Figure 14. Avoid over-tightening.
3. Install the other antenna in the same way.

Change the antenna orientation to vertical to achieve better signal coverage.

Figure 14 Installing WLAN antennas



Installing a standard 4G SIM card

⚠ CAUTION:

- Do not install or remove a standard 4G SIM card when the router is powered on.
- To avoid damage to the holder, do not use excessive strength when you install the standard 4G SIM card.

The JG596A router supports the following frequency ranges:

- **4G**—700 MHz LTE
- **3G**—800/1900 MHz CDMA

The JG704A router supports the following frequency ranges:

- **4G**—700/1700/2100 MHz LTE
- **3G**—800/850/1900/2100 MHz WCDMA/HSDPA/HSUPA/HSPA+/DC-HSPA+
- **2G**—850/900/1800/1900 MHz GSM/GPRS/EDGE

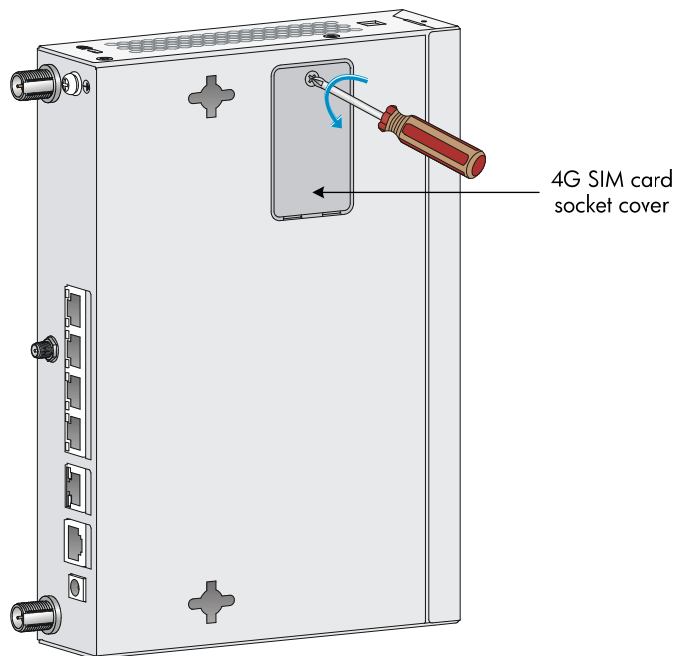
The JG665A router supports the following frequency ranges:

- **4G**—DD800/900/1800/2100/2600 MHz LTE
- **3G**—900/2100 MHz WCDMA/HSDPA/HSUPA/HSPA+
- **2G**—900/1800/1900 MHz GSM/GPRS/EDGE

To install a standard 4G SIM card:

1. Use a screwdriver to loosen the screws on the standard 4G SIM card socket cover on the bottom of the chassis, and remove the cover.

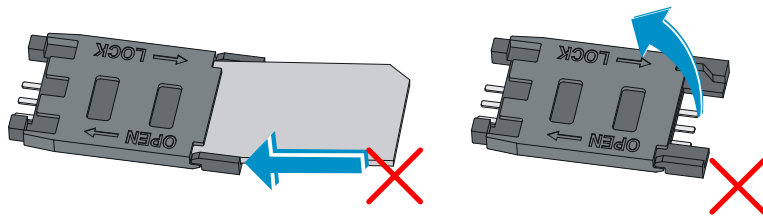
Figure 15 Removing the 4G SIM card socket cover



2. Push the 4G SIM card holder in the direction marked "**OPEN**" so the holder projects upwards. Do not directly insert the standard 4G SIM card into the holder, or lift the holder.

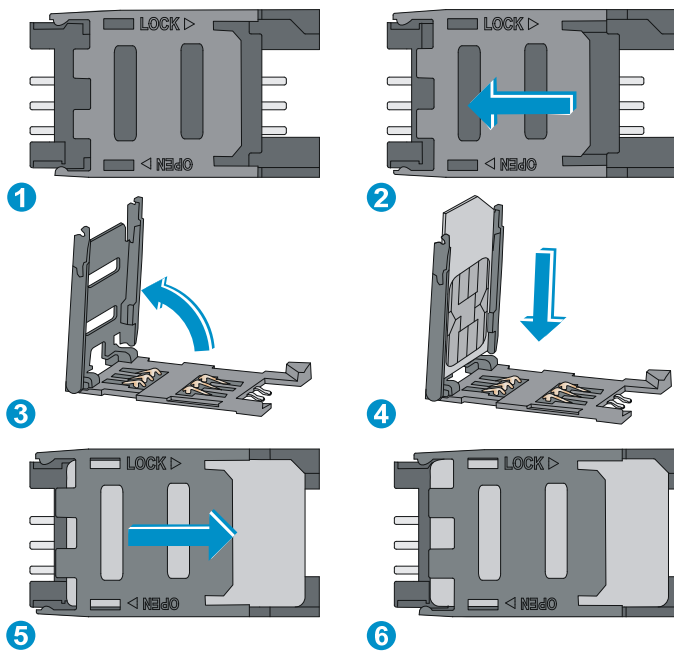
Figure 16 illustrates the wrong installation methods.

Figure 16 Incorrect installation methods



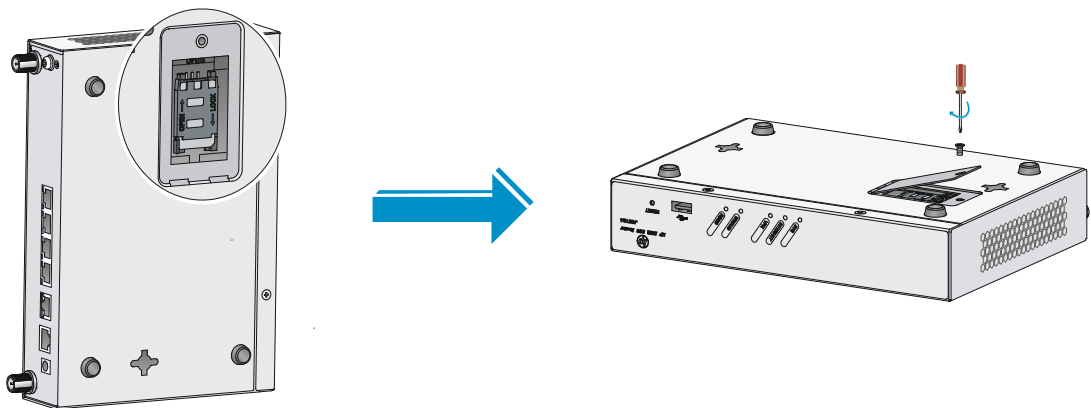
3. Insert the standard 4G SIM card along the slide rails to the holder.
4. Put down the holder and push the holder in the direction marked "LOCK" to lock the standard 4G SIM card in position.

Figure 17 Installing the standard 4G SIM card



5. Position the socket cover and use a screwdriver to fasten the screws on the cover.

Figure 18 Installing the cover



Installing a 4G antenna

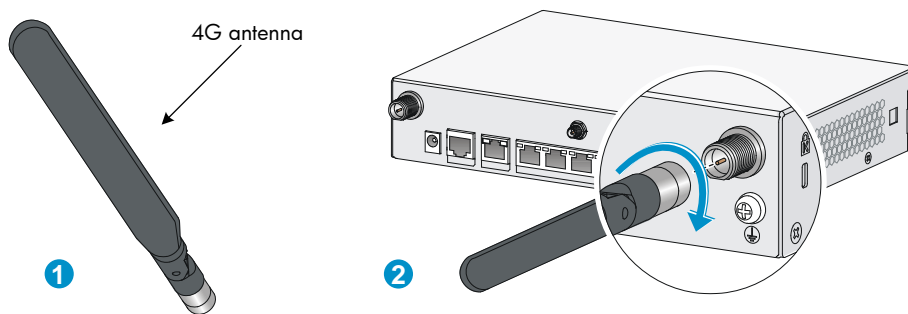
△ CAUTION:

When you install two 4G antennas on a JG704A router, connect one or both of the antennas to the router by using antenna extender cables.

To install a 4G antenna:

1. Change the angle of the antenna orientation from vertical to horizontal.
2. Attach the antenna to the router, as shown in Figure 19. Avoid over-tightening.
Change the antenna orientation to vertical to achieve better signal coverage.

Figure 19 Installing a 4G antenna



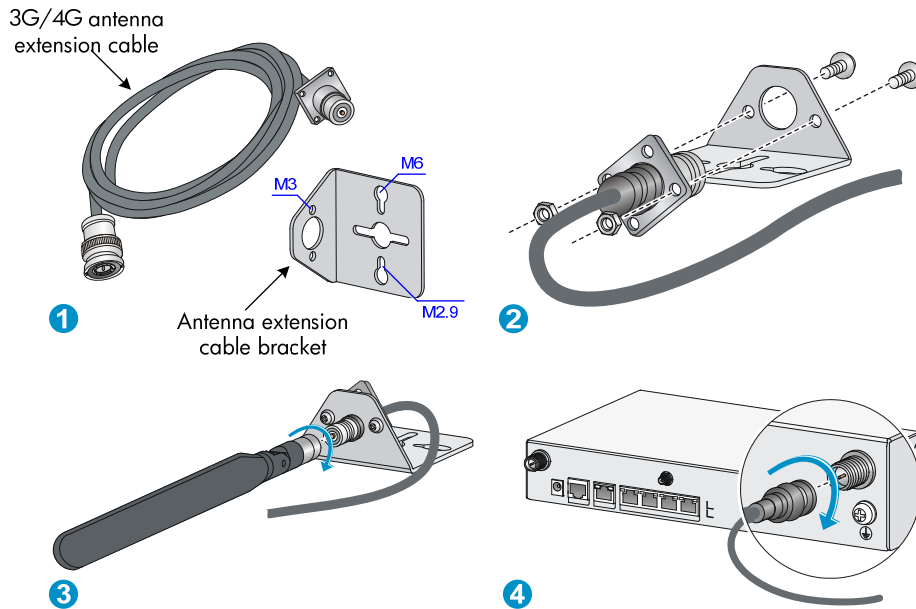
Installing a 3G/4G antenna extender cable to a 4G device

One 3G/4G antenna extender cable is provided with the JG704A router. No 3G/4G antenna extender cable is provided with other router models. Purchase 3G/4G antenna extender cables as required.

To install a 3G/4G antenna extender cable to a 4G device:

1. Thread the male connector of the cable through the hole on the bracket, and use screws (from behind the bracket) to secure the male connector to the bracket.
2. Change the angle of the antenna orientation from vertical to horizontal.
3. Attach the antenna to the male connector of the cable.
4. Attach the female connector of the cable to the router.

Figure 20 Installing the 3G/4G antenna extender cable to a 4G device



Installing a GPS antenna

1. Attach one end of the antenna to the GPS antenna connector on the router, as shown in [Figure 21](#). Avoid over-tightening.
2. Attach the magnetic end of the antenna to a metal media near the router.

Figure 21 Installing a GPS antenna



JG704A router antenna installation instructions

When you install a 4G or GPS antenna to a JG704A router, follow these guidelines:

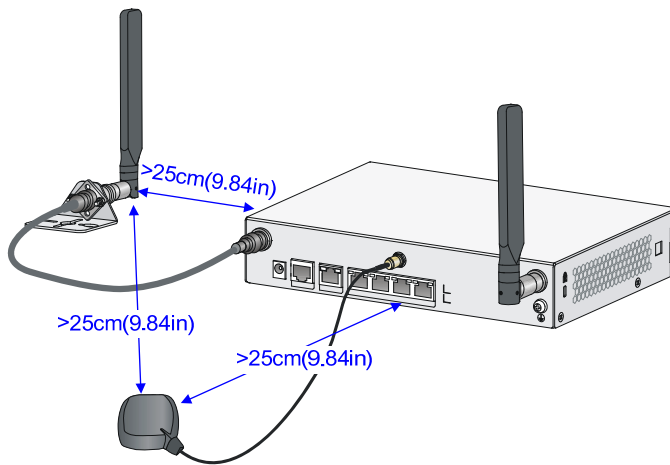
- Ensure a minimum distance of 25 cm (9.84 in) between the antenna and any other antenna on the router.
- Ensure a minimum distance of 25 cm (9.84 in) between the GPS antenna or the 4G antenna (when an extender cable is used) and the router.

Only one 4G extender cable is provided with the router. Purchase another one yourself if you want to install two 4G extender cables. [Table 6](#) lists 4G extender cables provided by HP. You can also use 4G extender cables from other vendors, for any consequences resulting from which HP assumes no liabilities.

Table 6 HP 4G extender cables

J number	HP 4G extender cable
JG522A	HP MSR 2.8m Extender Cable
JG666A	HP MSR 6m Extender Cable
JG667A	HP MSR 15m Extender Cable

Figure 22 JG704A router antenna installation precautions



Connecting interface cables

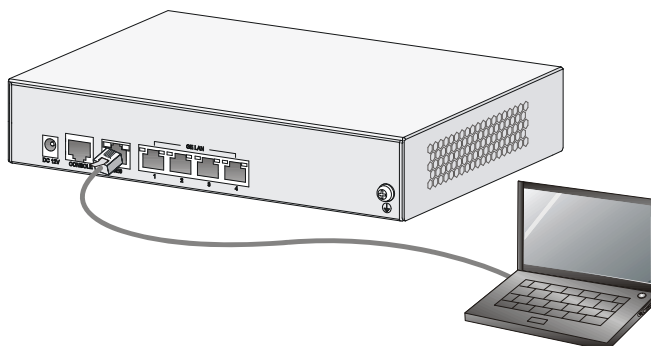
This section uses the Ethernet cable for example.

Because fixed Ethernet ports support MDI/MDIX autosensing, you can use either a straight-through cable or a crossover cable for connection.

To connect an Ethernet cable:

1. Connect one end of the cable to an Ethernet port on the router.
2. Connect the other end of the cable to the peer device.
3. Examine the port LED status. For more information, see "[LED description](#)."

Figure 23 Connecting the router to a computer



Connecting the console cable and setting terminal parameters

Connecting the console cable

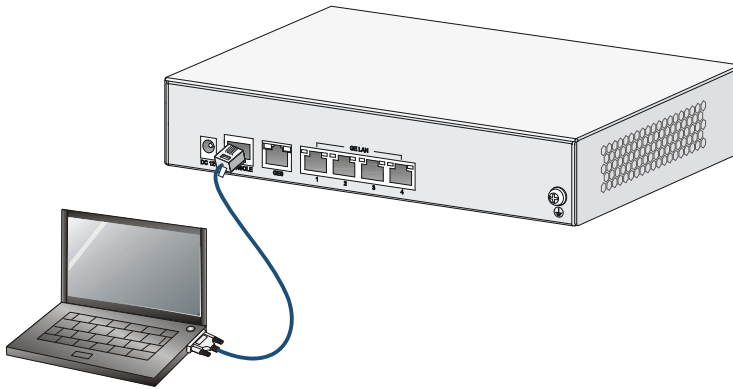
CAUTION:

When using a console cable to connect a PC to the router, first connect the DB-9 end of the console cable to the PC serial port, and then connect the RJ-45 connector of the console cable to the router console port.

To connect the console cable, as shown in [Figure 24](#):

1. Select a console terminal, which can be an ASCII terminal with an RS232 serial port or a PC. (A PC is more commonly used.)
2. Connect the DB-9 connector (female) of the console cable to the RS-232 serial port of the console terminal and the RJ-45 connector to the console port of the router.

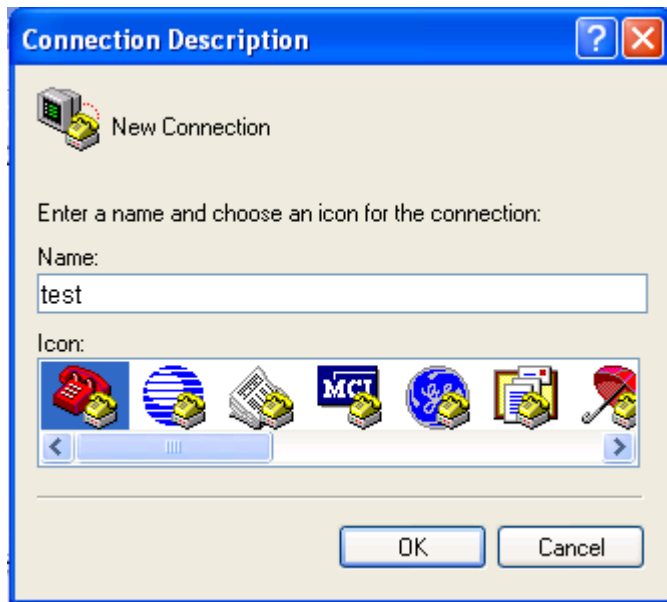
Figure 24 Connecting the console cable



Setting console terminal parameters

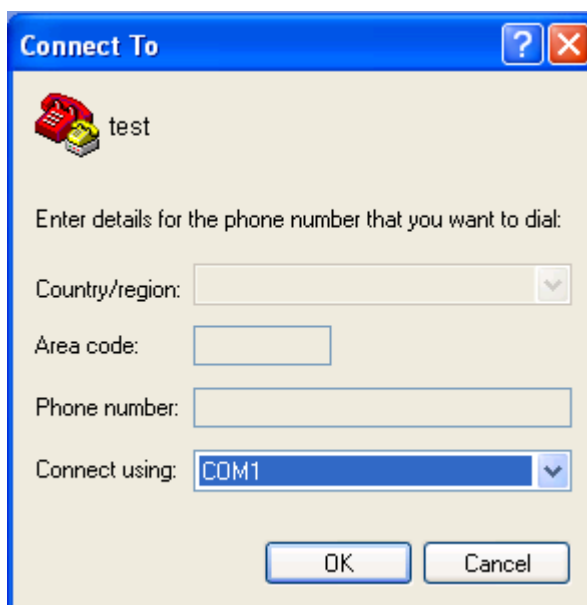
1. Select **Start > All Programs > Accessories > Communications > HyperTerminal**.
The **Connection Description** dialog box appears.
2. Enter the name of the new connection in the **Name** field and click **OK**.

Figure 25 Connection description



3. Select the serial port to be used from the **Connect using** list, and click **OK**.

Figure 26 Setting the serial port used by the HyperTerminal connection

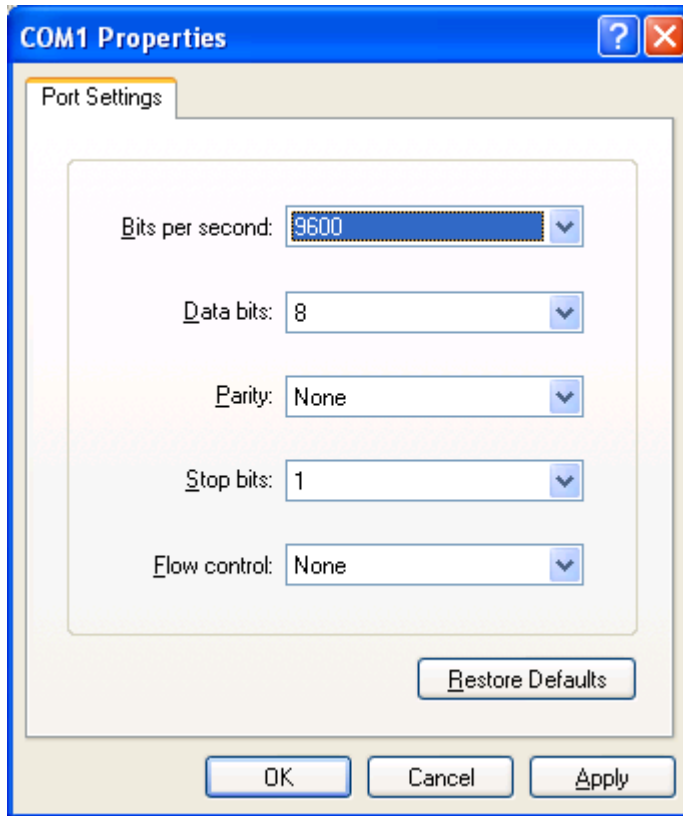


4. Set **Bits per second** to **9600**, **Data bits** to **8**, **Parity** to **None**, **Stop bits** to **1**, and **Flow control** to **None**, and click **OK**.

NOTE:

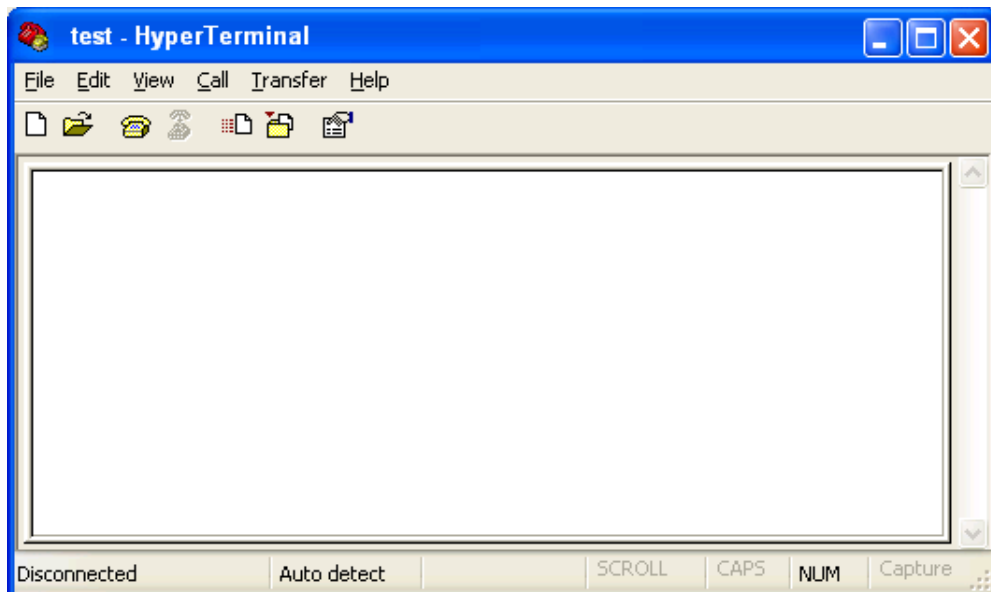
To restore the default settings, click **Restore Defaults**.

Figure 27 Setting the serial port parameters



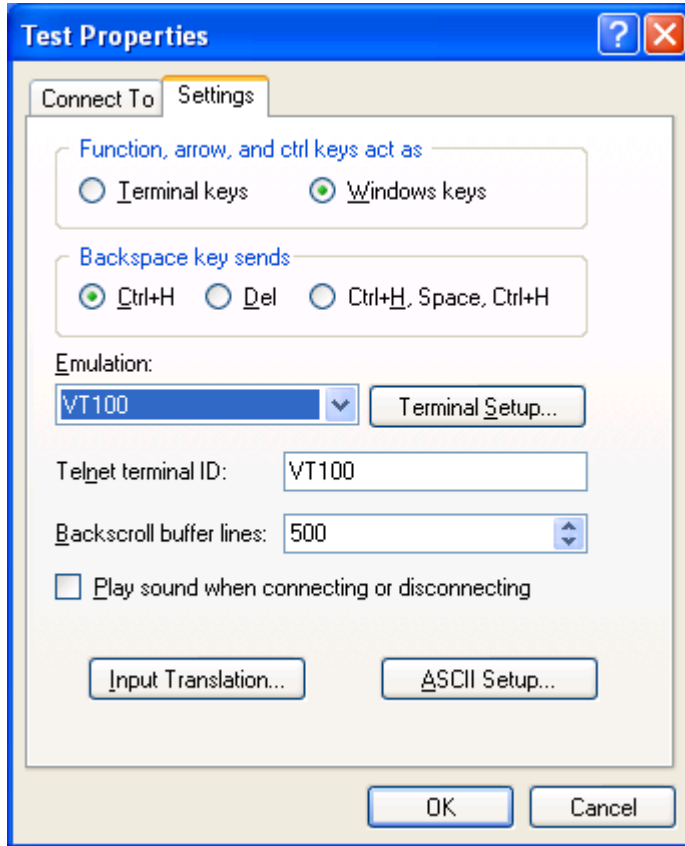
5. Select **File > Properties** in the HyperTerminal window.

Figure 28 HyperTerminal window



6. On the **Settings** tab, set the emulation to **VT100** or **Auto Detect**, and click **OK**.

Figure 29 Setting the terminal emulation parameters



Connecting the power adapter

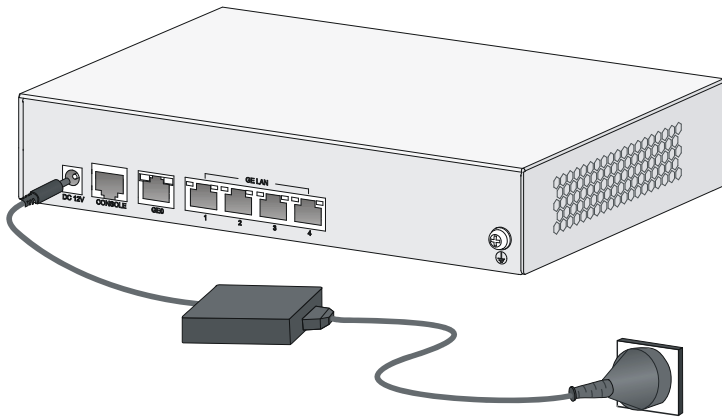
The router's power adapter converts AC power to DC power, as follows:

- AC rated voltage range: 100 VAC to 240 VAC @ 50 Hz to 60 Hz
- DC Rated voltage: 12 VDC

To connect the power adapter, as shown in [Figure 30](#):

1. Make sure the router is correctly grounded. For more information, see "[Grounding the router](#)."
2. Using the adapter's AC power cord, connect the power adapter to an AC power source.
3. Connect the DC power cord connector on the power adapter to the DC power receptacle on the router's panel.

Figure 30 Connecting the power adapter



Verifying the installation

After you complete the installation, verify that:

- There is enough space around the router for heat dissipation.
- The router is mounted securely on the wall or on a sturdy workbench.
- Antennas, USB devices, and interface modules are installed correctly.
- The router and power module are grounded correctly.
- The power supply meets requirements.
- The router is connected correctly to the console terminal and other devices; parameters are configured correctly on the console terminal.

Before starting up the router, set up the console terminal as described in "[Connecting the console cable and setting terminal parameters](#)." Then, power on the router and perform initial configuration for the router.

Powering on the router

WARNING!

Before powering on the router, locate the power source switch so that you can cut off power promptly in case of an emergency.

- Switch on the power source.
- Turn on the power switch on the router.

Startup process

After power-on, the router initializes its memory, and then runs the extended BootWare. The console terminal screen displays the following information:

```
System is starting...
Do you want to check SDRAM? [Y/N]
Booting Normal Extend BootWare
```

```

The Extend BootWare is self-decompressing.....Done!

*****
*
*          HP MSR931 BootWare, Version 1.01          *
*
*****

Copyright (c) 2010-2012 Hewlett-Packard Development Company, L.P.

Compiled Date       : Sep  3 2012
CPU Type           : P1016
CPU L1 Cache       : 32KB
CPU L2 Cache       : 256KB
CPU Clock Speed    : 533MHz
Memory Type        : DDR3 SDRAM
Memory Size        : 256MB
Memory Speed       : 667MHz
BootWare Size      : 1024KB
Flash Size         : 128MB
CPLD Version       : 131.0
PCB Version        : 3.0
BootWare Validating...
Press Ctrl+B to enter extended boot menu...
Starting to get the main application file--flash:/mainmsr93x.bin!.....
.....

The main application file is self-decompressing.....
.....
.....Done!
System application is starting.....
User interface aux0 is available.

Press ENTER to get started.

Press Enter and the system displays the following prompt:
<HP>

```

This prompt indicates that the router has entered user view and is ready to configure.

Power-on check

After powering on the router, check the following items:

- The LEDs on the front panel are normal, as described in "[LED description](#)."
- The console terminal displays information correctly. You can see the startup window on the local console terminal. For more information, see "[Startup process](#)."
- After completing the POST, the system prompts you to press **Enter**. When the command line prompt appears, the router is ready to configure.

Configuring basic settings for the router

After the router is powered on for the first time, configure basic settings for the router. For more information, see *HP MSR Routers Fundamentals Configuration Guide* and *HP MSR Routers Fundamentals Command Reference*.

Troubleshooting

! IMPORTANT:

- The barcode on the router chassis contains product information that must be provided to HP Support before you return a faulty router for service.
 - Keep the tamper-proof seal on a mounting screw on the chassis cover intact, and if you want to open the chassis, contact HP for permission. Otherwise, HP shall not be liable for any consequence.
-

Power supply failure

If the router cannot be powered on and LEDs on the front panel are off, it indicates that the power supply is faulty.

To troubleshoot the power supply:

1. Power off the router.
2. Verify that the router's power cords are connected firmly.
3. Verify that the power source is operating correctly.
4. Determine if the power cord is damaged.

If the problem persists, contact HP Support.

System configuration problems

If the configuration environment setup is correct, the console terminal displays boot information when the router is powered on. If the setup is incorrect, the console terminal displays nothing or garbled text.

No terminal display

If the console terminal displays nothing when the router is powered on, verify the following items:

- The power supply system is operating correctly.
- The console cable is connected correctly.
- The console cable is connected to the serial port that is configured for the console terminal.
- The console terminal properties are set to the following: **Bits per second: 9600, Data bits: 8, Parity: None, Stop bits: 1, Flow control: None, and Terminal Emulation: VT100.**
- The console cable is operating correctly.

Garbled terminal display

If terminal display is garbled, make sure the **Data bits** field for the console terminal is set to **8**. If the **Data bits** field is set to **5** or **6**, the console terminal will display garbled characters.

No response from the serial port

If the serial port does not respond, verify that the serial cable is in good condition and the serial port settings are correct.

Password loss

User password loss

If you lose your password, you cannot enter the system. In this case, you can boot the system by ignoring the system configuration.

To solve the user password loss:

1. Enter the main BootWare menu, and select **6** to boot the system by ignoring the system configuration.

The system prompts the following:

```
Flag Set Success.
```

The output shows that the setting succeeded.

2. When the main BootWare menu appears again, and select **0** to reboot the system.

```
System is rebooting now.
```

```
System start booting...
```

```
Booting Normal Extend BootWare....
```

3. Set a new password in system view after the system reboots. The console port uses password authentication, and the password is set to **123456** and stored in plain text.

```
<HP> system-view
```

```
[HP] user-interface console 0
```

```
[HP-ui-console0] authentication-mode password
```

```
[HP-ui-console0] set authentication password simple 123456
```

When you set the password by using the **set authentication password { cipher | simple } password** command, note the following:

- If you specify the **cipher** keyword, the password is stored in cipher text. You cannot view the password by using the **display current-configuration** command.
 - If you specify the **simple** keyword, the password is stored in plain text. You can use the **display current-configuration** command to view the password in the current configuration.
4. After modifying the user password, save it by executing the **save** command. HP recommends that you save the modifications as the default configuration file.

```
[HP] save
```

After reboot, the system uses the initial default configuration, but keeps the original configuration file in storage. You can restore the original configuration by using the **display saved-configuration** command to display the configuration, and then copying and executing the configuration.

Super password loss

The super password provides access to four super levels, enabling you to perform higher-level operations.

To recover from super password loss:

1. On the main BootWare menu, select **8**.

This setting (**Clear Super Password**) is valid only for the first reboot of the router. The super password is restored after the second reboot.

```
=====<EXTEND-BOOTWARE MENU>=====
|<1> Boot System                               |
|<2> Enter Serial SubMenu                     |
|<3> Enter Ethernet SubMenu                  |
|<4> File Control                             |
|<5> Modify BootWare Password                |
|<6> Skip Current System Configuration        |
|<7> BootWare Operation Menu                 |
|<8> Clear Super Password                    |
|<9> Storage Device Operation                |
|<0> Reboot                                  |
=====
Enter your choice(0-9):8
```

The following output indicates that you have successfully cleared the super password.

Clear Application Password Success!

2. Exit the menu and reboot the router.

The super password is cleared. You can enter system view.

3G/4G SIM card and 3G/4G antenna failures

When the LEDs on the front panel indicate abnormal state of the 3G/4G SIM card and 3G/4G antenna, verify the following items:

- The SIM card has been correctly installed and makes good contact with the card socket.
- The SIM card matches the built-in module.
- The antenna is correctly installed.
- The SIM card, card socket, and antenna are in good condition.
- The network provided by NSP is running correctly.

If the problem still exists, contact HP Support.

Restoring the factory settings

Scenario 1

Symptom

When you replace the router, the router password is lost. As a result, you cannot log in to the router and do not know the router configuration.

Solution

Because the router is replaced, you do not need to save the configuration of the router. In this case, you can press the **Reset** button for more than 4 seconds to reboot the router and restore the factory settings. Then, you can use the username and password shipped with the router to log in to the router.

When the router configuration must be saved and you have a console cable, you can log in to the router from the BootWare menu. For more information, see "[User password loss](#)."

Scenario 2

Symptom

After the configuration is modified, the network connectivity is lost. When you check the configuration, the configuration is very complicated and it is hard to locate the errors. In this case, you must configure the router again.

Solution

If you have not saved any configuration, you can reboot the router through pressing the **Reset** button for a short time or power off the router.

If you have saved the configuration, delete the configuration file at the CLI, and press the **Reset** button to restore the factory settings.

Scenario 3

Symptom

The router crashes.

Solution

Press the **Reset** button for a short time to reboot the router.

Reset button usage guidelines

The router provides the **Reset** button. You can use the button to reboot the system or restore the factory settings.

1. Press the **Reset** button for a short time to reboot the router.
2. Press the **Reset** button for more than 4 seconds to reboot the router and restore the factory settings.

Appendix A Chassis views and technical specifications

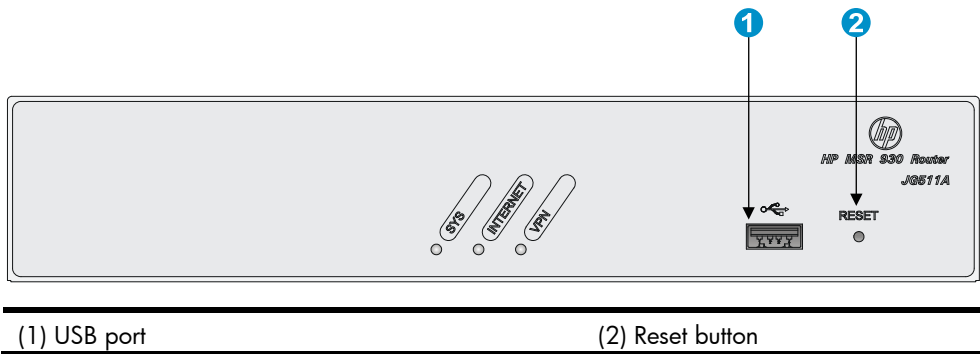
The MSR93X routers include the following models: JG511A, JG512A, JH012A, JG513A, JG514A, JG515A, JG531A, JG516A, JG517A, JG518A, JG519A, JH013A, JG520A, JG596A, JG665A, JG704A, and JG597A.

Chassis views

The figures in this appendix are for illustration only.

JG511A

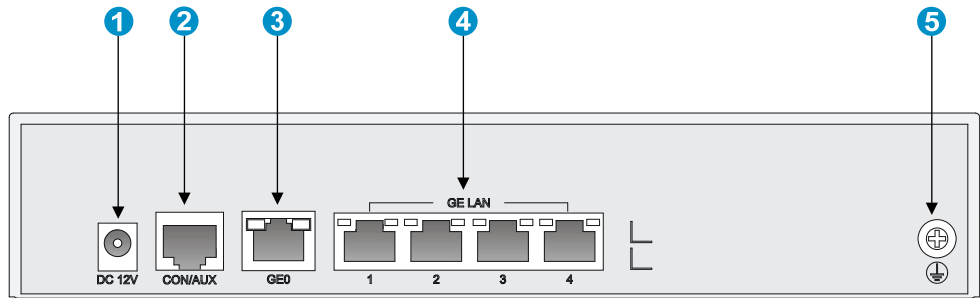
Figure 31 Front view



(1) USB port

(2) Reset button

Figure 32 Rear view



(1) Power adapter port

(2) Console/AUX port

(3) Ethernet WAN port (GE0)

(4) Ethernet LAN ports (GE1 to GE4)

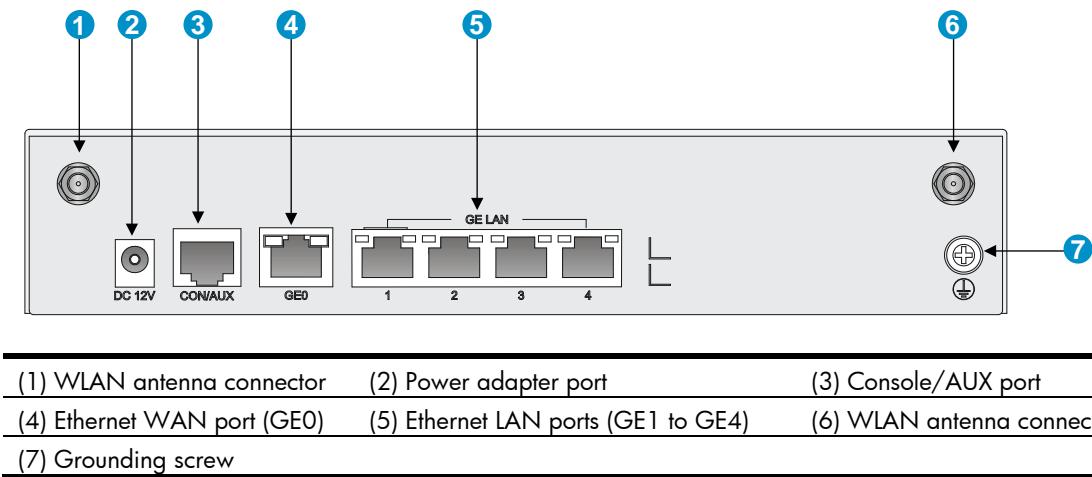
(5) Grounding screw

JG512A

Figure 33 Front view



Figure 34 Rear view

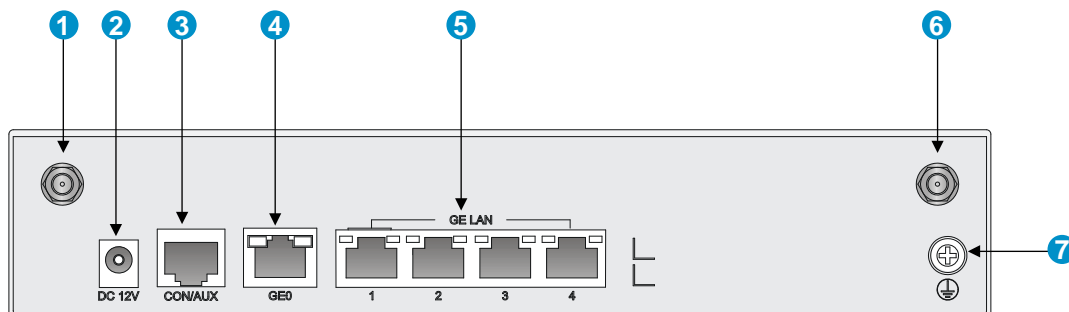


JH012A

Figure 35 Front view



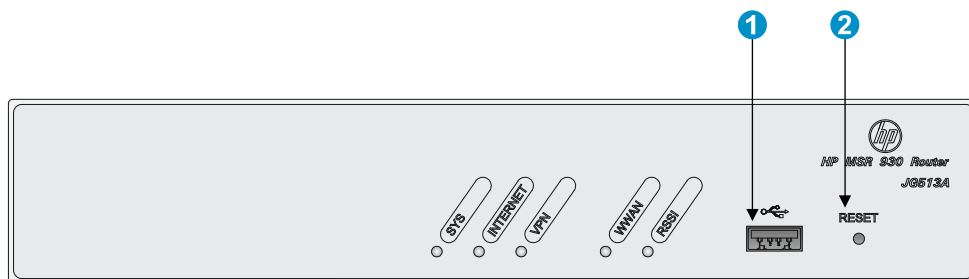
Figure 36 Rear view



- | | | |
|-----------------------------|-------------------------------------|----------------------------|
| (1) WLAN antenna connector | (2) Power adapter port | (3) Console/AUX port |
| (4) Ethernet WAN port (GE0) | (5) Ethernet LAN ports (GE1 to GE4) | (6) WLAN antenna connector |
| (7) Grounding screw | | |

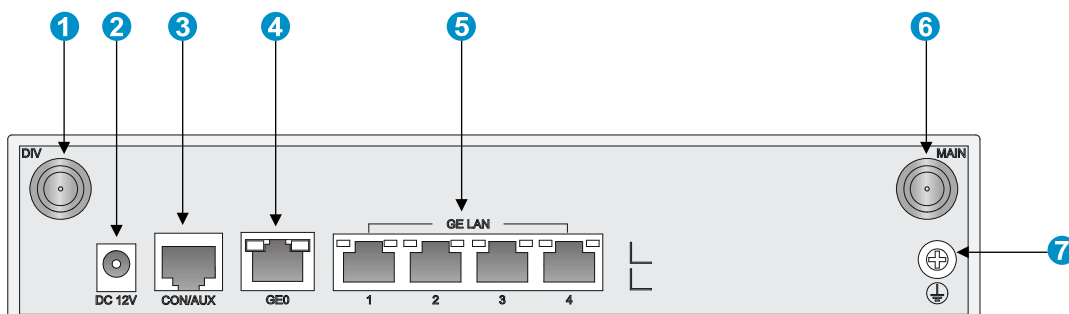
JG513A

Figure 37 Front view



- | | |
|--------------|------------------|
| (1) USB port | (2) Reset button |
|--------------|------------------|

Figure 38 Rear view



- | | | |
|--|-------------------------------------|--------------------------------------|
| (1) 3G antenna auxiliary connector (DIV) | (2) Power adapter port | (3) Console/AUX port |
| (4) Ethernet WAN port (GE0) | (5) Ethernet LAN ports (GE1 to GE4) | (6) 3G antenna main connector (MAIN) |
| (7) Grounding screw | | |

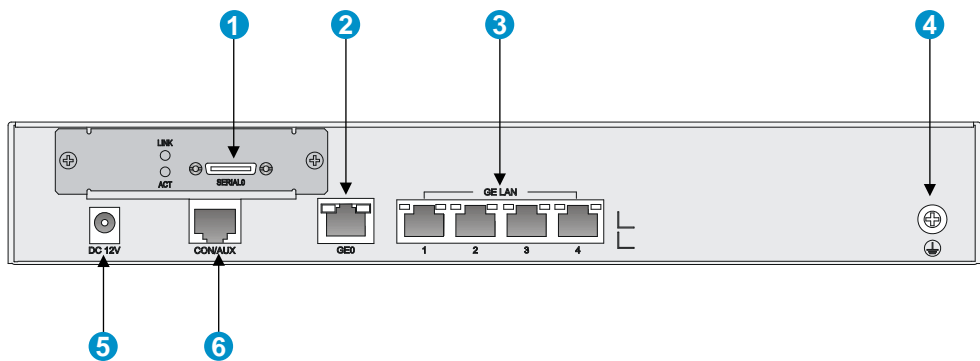
JG514A

Figure 39 Front view



- | | |
|--------------|------------------|
| (1) USB port | (2) Reset button |
|--------------|------------------|

Figure 40 Rear view



- | | | |
|--|-----------------------------|-------------------------------------|
| (1) Synchronous/asynchronous serial port (Serial0) | (2) Ethernet WAN port (GE0) | (3) Ethernet LAN ports (GE1 to GE4) |
| (4) Grounding screw | (5) Power adapter port | (6) Console/AUX port |

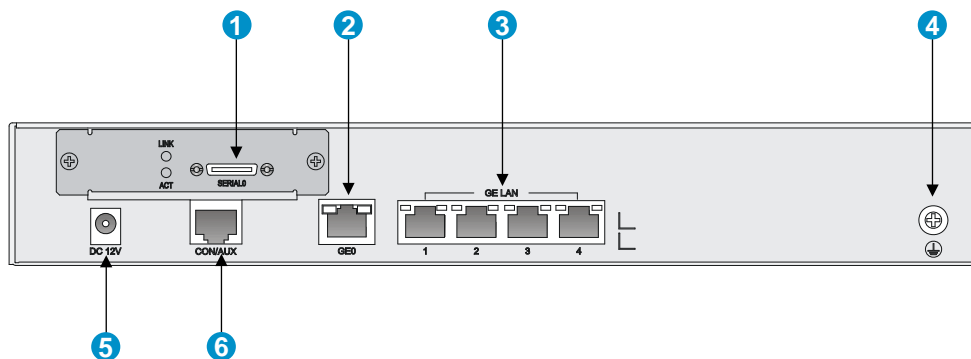
JG515A

Figure 41 Front view



- | | |
|--|--------------------------------------|
| (1) 3G antenna auxiliary connector (DIV) | (2) USB port |
| (3) Reset button | (4) 3G antenna main connector (MAIN) |

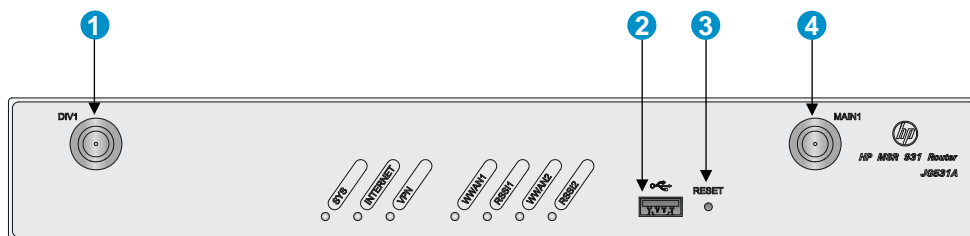
Figure 42 Rear view



- | | | |
|--|-----------------------------|-------------------------------------|
| (1) Synchronous/asynchronous serial port (Serial0) | (2) Ethernet WAN port (GE0) | (3) Ethernet LAN ports (GE1 to GE4) |
| (4) Grounding screw | (5) Power adapter port | (6) Console/AUX port |

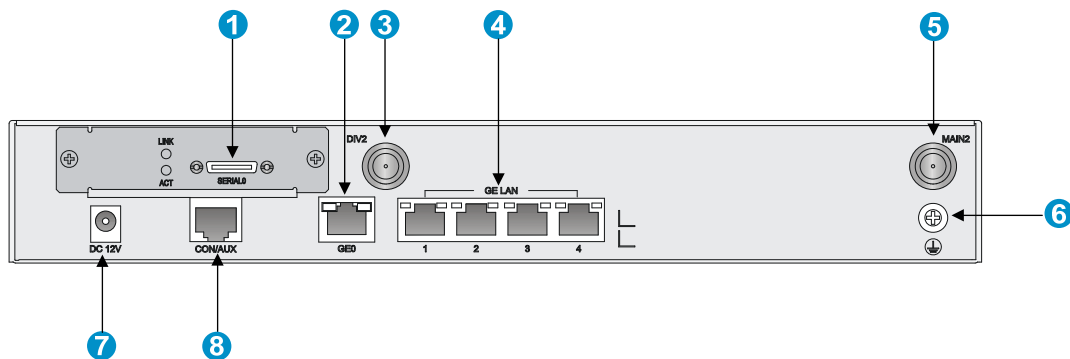
JG531A

Figure 43 Front view



- | | |
|---|---------------------------------------|
| (1) 3G antenna auxiliary connector (DIV1) | (2) USB port |
| (3) Reset button | (4) 3G antenna main connector (MAIN1) |

Figure 44 Rear view



- | | | |
|--|---------------------------------------|---|
| (1) Synchronous/asynchronous serial port (Serial0) | (2) Ethernet WAN port (GE0) | (3) 3G antenna auxiliary connector (DIV2) |
| (4) Ethernet LAN ports (GE1 to GE4) | (5) 3G antenna main connector (MAIN2) | (6) Grounding screw |
| (7) Power adapter port | (8) Console/AUX port | |

JG516A

Figure 45 Front view

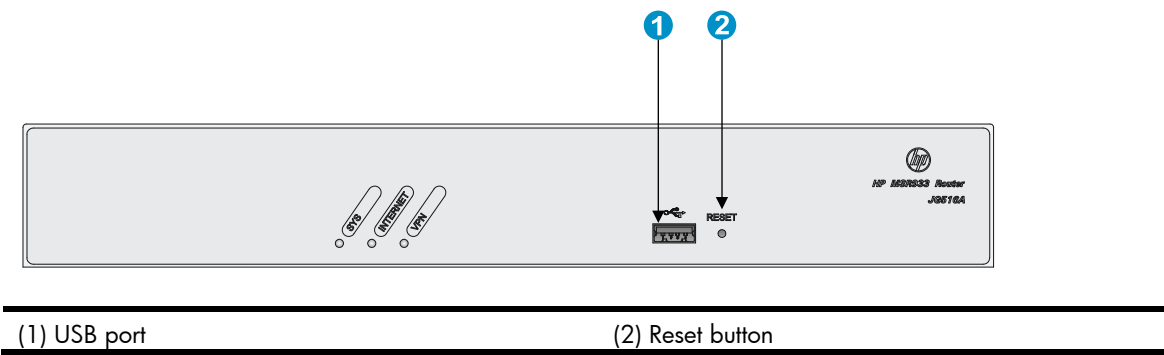
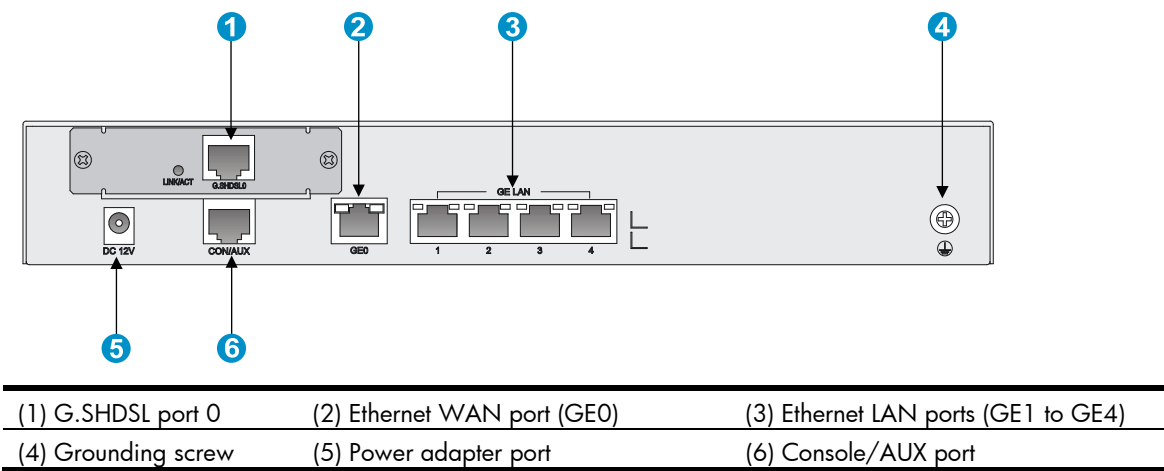


Figure 46 Rear view



JG517A

Figure 47 Front view

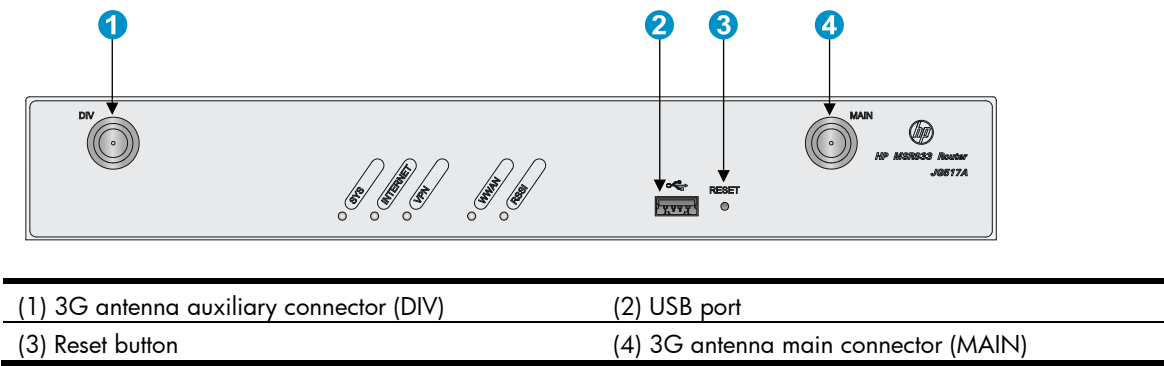
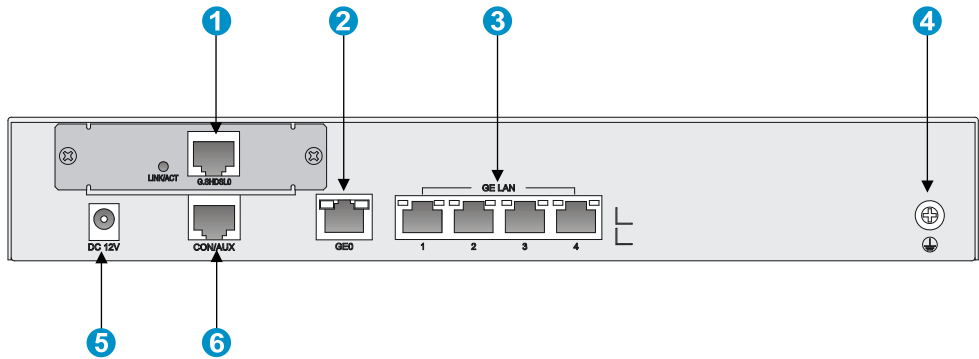


Figure 48 Rear view



- | | | |
|---------------------|-----------------------------|-------------------------------------|
| (1) G.SHDSL port 0 | (2) Ethernet WAN port (GE0) | (3) Ethernet LAN ports (GE1 to GE4) |
| (4) Grounding screw | (5) Power adapter port | (6) Console/AUX port |

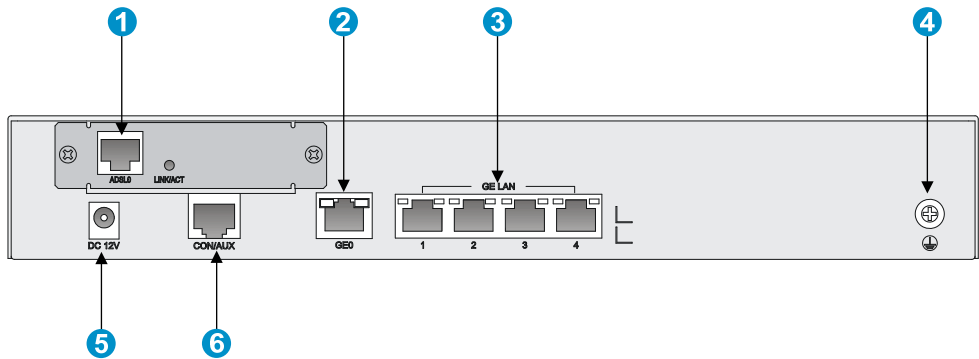
JG518A

Figure 49 Front view



- | | |
|--------------|------------------|
| (1) USB port | (2) Reset button |
|--------------|------------------|

Figure 50 Rear view



- | | | |
|---------------------|-----------------------------|-------------------------------------|
| (1) ADSL port 0 | (2) Ethernet WAN port (GE0) | (3) Ethernet LAN ports (GE1 to GE4) |
| (4) Grounding screw | (5) Power adapter port | (6) Console/AUX port |

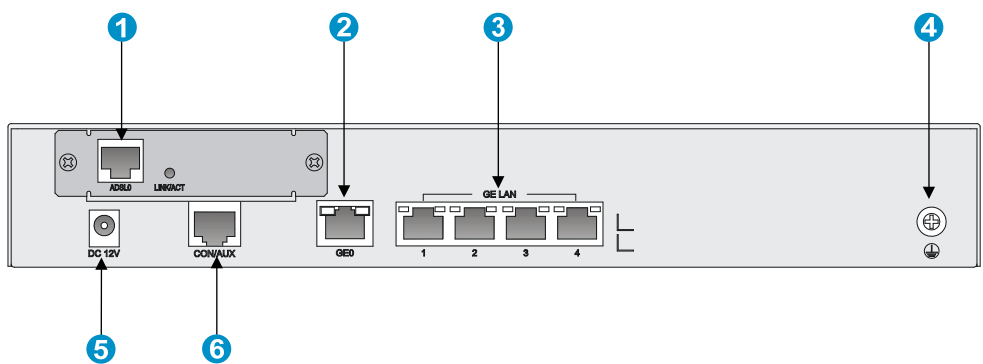
JG519A

Figure 51 Front view



(1) WLAN antenna connector	(2) USB port
(3) Reset button	(4) WLAN antenna connector

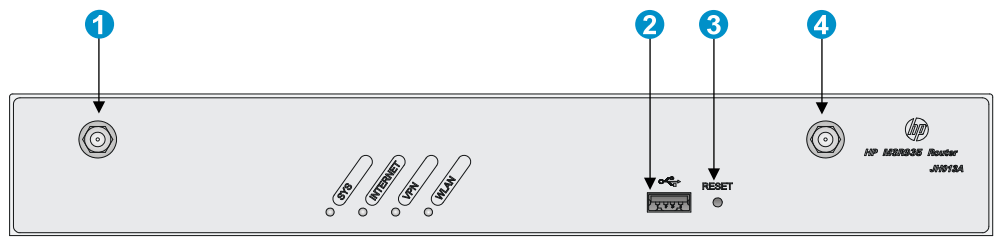
Figure 52 Rear view



(1) ADSL port 0	(2) Ethernet WAN port (GE0)	(3) Ethernet LAN ports (GE1 to GE4)
(4) Grounding screw	(5) Power adapter port	(6) Console/AUX port

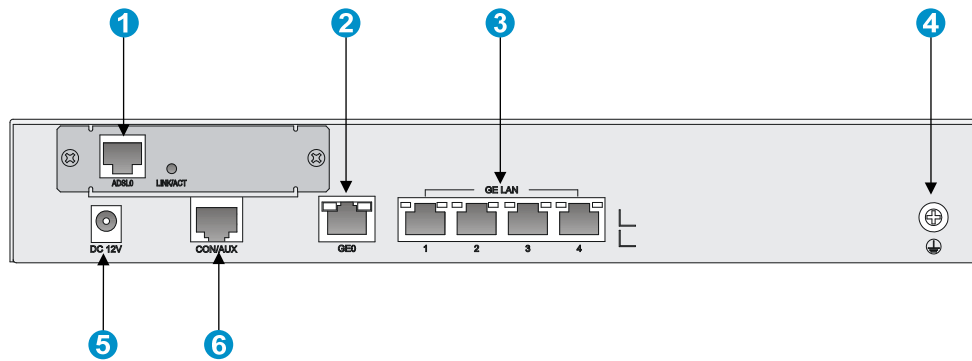
JH013A

Figure 53 Front view



(1) WLAN antenna connector	(2) USB port
(3) Reset button	(4) WLAN antenna connector

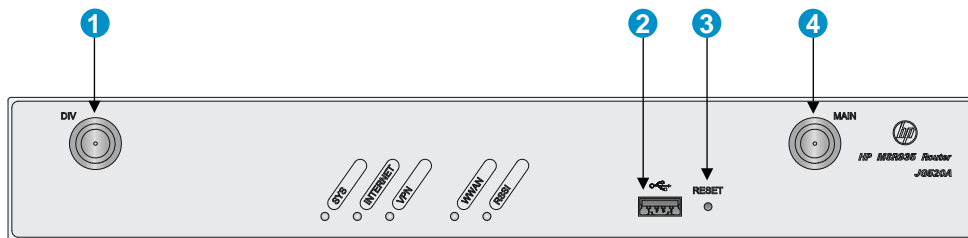
Figure 54 Rear view



- | | | |
|---------------------|-----------------------------|-------------------------------------|
| (1) ADSL port 0 | (2) Ethernet WAN port (GE0) | (3) Ethernet LAN ports (GE1 to GE4) |
| (4) Grounding screw | (5) Power adapter port | (6) Console/AUX port |

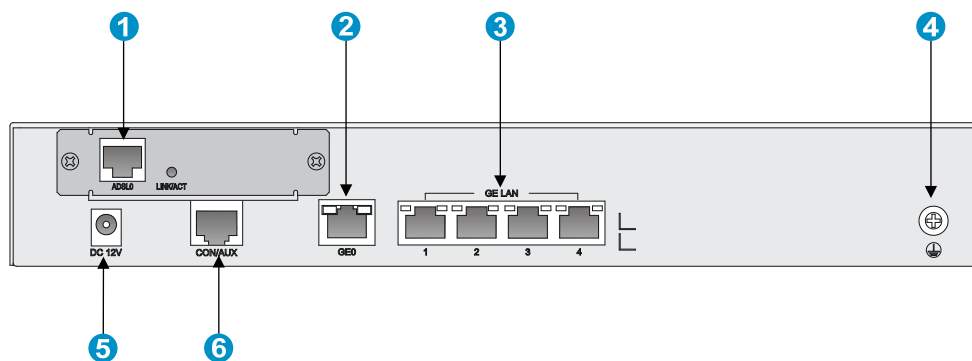
JG520A

Figure 55 Front view



- | | |
|--|--------------------------------------|
| (1) 3G antenna auxiliary connector (DIV) | (2) USB port |
| (3) Reset button | (4) 3G antenna main connector (MAIN) |

Figure 56 Rear view



- | | | |
|---------------------|-----------------------------|-------------------------------------|
| (1) ADSL port 0 | (2) Ethernet WAN port (GE0) | (3) Ethernet LAN ports (GE1 to GE4) |
| (4) Grounding screw | (5) Power adapter port | (6) Console/AUX port |

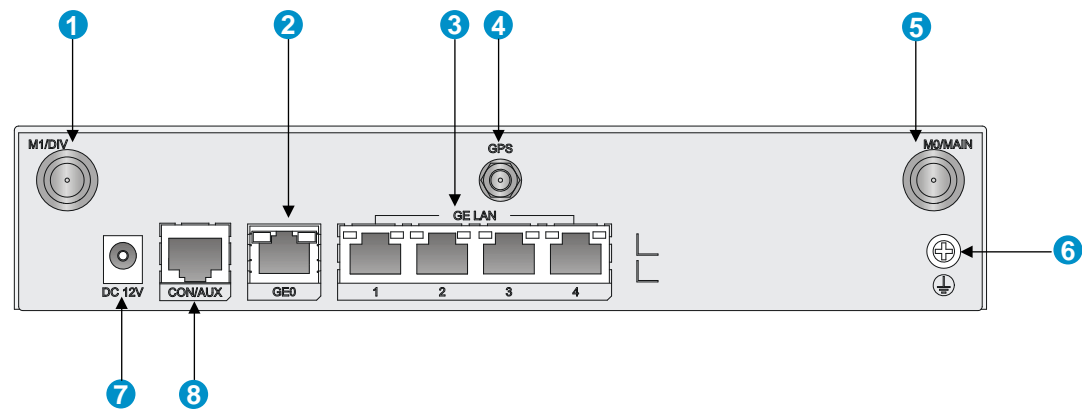
JG596A

Figure 57 Front view



- | | |
|--------------|------------------|
| (1) USB port | (2) Reset button |
|--------------|------------------|

Figure 58 Rear view



- | | | |
|-----------------------------|-----------------------------|-------------------------------------|
| (1) 4G antenna connector M1 | (2) Ethernet WAN port (GE0) | (3) Ethernet LAN ports (GE1 to GE4) |
| (4) GPS antenna connector | (5) 4G antenna connector M0 | (6) Grounding screw |
| (7) Power adapter port | (8) Console/AUX port | |

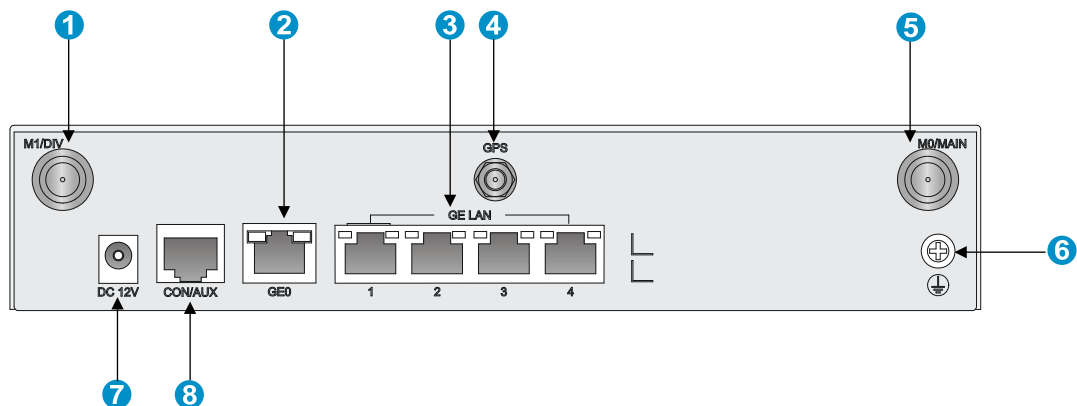
JG665A

Figure 59 Front view



- | | |
|--------------|------------------|
| (1) USB port | (2) Reset button |
|--------------|------------------|

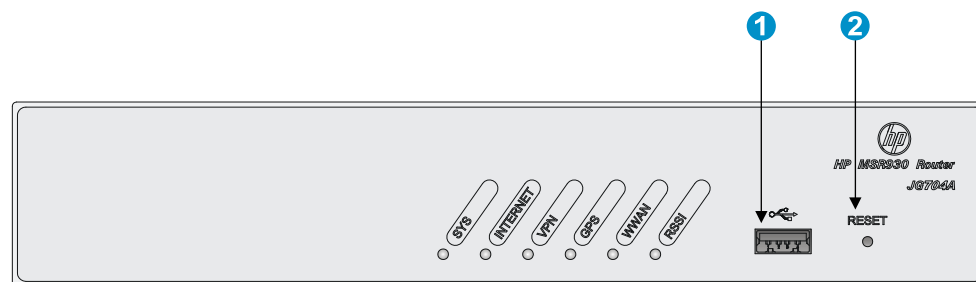
Figure 60 Rear view



(1) 4G antenna connector M1	(2) Ethernet WAN port (GE0)	(3) Ethernet LAN ports (GE1 to GE4)
(4) GPS antenna connector	(5) 4G antenna connector M0	(6) Grounding screw
(7) Power adapter port	(8) Console/AUX port	

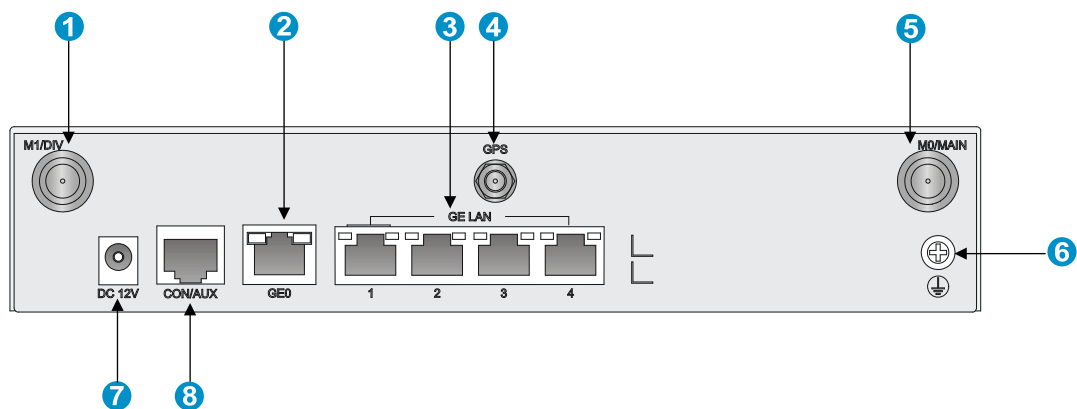
JG704A

Figure 61 Front view



(1) USB port	(2) Reset button
--------------	------------------

Figure 62 Rear view



(1) 4G antenna connector M1	(2) Ethernet WAN port (GE0)	(3) Ethernet LAN ports (GE1 to GE4)
(4) GPS antenna connector	(5) 4G antenna connector M0	(6) Grounding screw
(7) Power adapter port	(8) Console/AUX port	

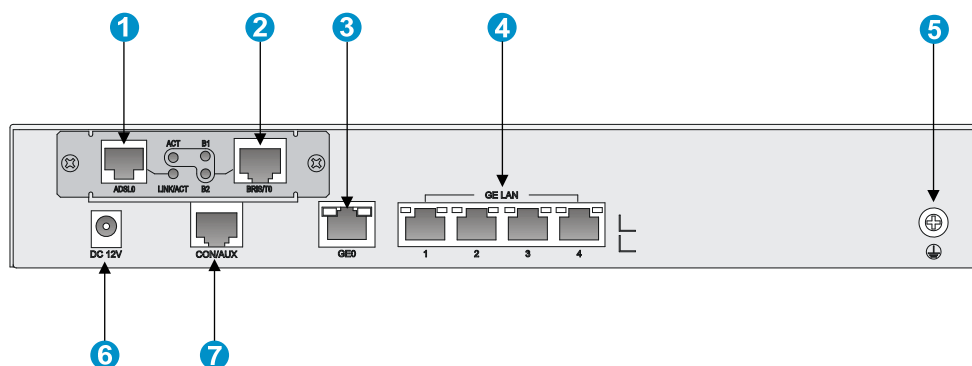
JG597A

Figure 63 JG597A front view



- | | |
|----------------------------|----------------------------|
| (1) WLAN antenna connector | (2) USB port |
| (3) Reset button | (4) WLAN antenna connector |

Figure 64 JG597A rear view



- | | | |
|-------------------------------------|-----------------------|-----------------------------|
| (1) ADSL port 0 | (2) ISDN port BRIS/T0 | (3) Ethernet WAN port (GE0) |
| (4) Ethernet LAN ports (GE1 to GE4) | (5) Grounding screw | (6) Power adapter port |
| (7) Console/AUX port | | |

Technical specifications

Item	JG511 A	JG512 A/JH01 2A	JG513 A	JG514 A	JG515 A	JG531 A	JG516 A	JG517A
Console/AUX port	1							
USB port	1							
GE WAN port	1							
GE LAN port	4							
Serial port	N/A	N/A	N/A	1	1	1	N/A	N/A
G.SHDSL port	N/A	N/A	N/A	N/A	N/A	N/A	1	1
Built-in 3G module	N/A	N/A	1	N/A	1	2	N/A	1

Item	JG511 A	JG512 A/JH01 2A	JG513 A	JG514 A	JG515 A	JG531 A	JG516 A	JG517A
WLAN module	N/A	1	N/A	N/A	N/A	N/A	N/A	N/A
Memory	256 MB DDR III							
Flash	128 MB							
Dimensions (H × W × D) (excluding rubber feet and mounting brackets)	43.6 × 230 × 160 mm (1.72 × 9.06 × 6.30 in)				44.2 × 300 × 200 mm (1.74 × 11.81 × 7.87 in)			
Weight	1.0 kg (2.20 lb)	1.1 kg (2.43 lb)	1.1 kg (2.43 lb)	1.6 kg (3.53 lb)	1.6 kg (3.53 lb)	1.6 kg (3.53 lb)	1.6 kg (3.53 lb)	1.6 kg (3.53 lb)
AC power adapter	Rated input voltage: 100 VAC to 240 VAC @ 50 Hz or 60 Hz							
Max. AC power	24 W							
Operating temperature	0°C to 40°C (32°F to 104°F)							
Relative humidity (non-condensing)	5% to 90%							

Item	JG518A	JG519A /JH013 A	JG520A	JG597A	JG596A	JG665A	JG704A
Console/AUX port	1						
USB port	1						
GE WAN port	1						
GE LAN port	4						
ADSL port	1	1	1	1	N/A	N/A	N/A
ISDN port	N/A	N/A	N/A	1	N/A	N/A	N/A
Built-in 3G module	N/A	N/A	1	N/A	N/A	N/A	N/A
Built-in 4G module	N/A	N/A	N/A	N/A	1	1	1
WLAN module	N/A	1	N/A	1	1	1	1
Memory	256 MB DDR III						
Flash	128 MB						
Dimensions (H × W × D) (excluding rubber feet and mounting brackets)	44.2 × 300 × 200 mm (1.74 × 11.81 × 7.87 in)				43.6 × 230 × 160 mm (1.72 × 9.06 × 6.30 in)		

Item	JG519A						
	JG518A	/JH013 A	JG520A	JG597A	JG596A	JG665A	JG704A
Weight	1.6 kg (3.53 lb)			1.1 kg (2.43 lb)			
AC power adapter	Rated input voltage: 100 VAC to 240 VAC @ 50 Hz or 60 Hz						
Max. AC power	24 W						
Operating temperature	0°C to 40°C (32°F to 104°F)						
Relative humidity (non-condensing)	5% to 90%						

Antenna specifications

Table 7 4G antenna specifications

Item	Specification
Frequency range	698-960 MHz to 1710-2170 MHz
Voltage standing wave ratio (VSWR)	< 2.5
Input impedance	50 ohms
Gain	2 dBi
Max power consumption	5 W
Input interface	TNC male
Length	21.4 cm (8.43 in)
Color	Black
Weight	50 g (1.76 oz)
Operating temperature	-40°C to +85°C (-40°F to +185°F)

Table 8 3G antenna specifications

Item	Specification
Frequency range	806-960 MHz to 1710-2170 MHz
Voltage standing wave ratio (VSWR)	< 2.5
Input impedance	50 ohms
Gain	0 dBi
Max power consumption	25 W
Input interface	TNC male
Length	254 mm (10 in)
Color	Gray

Item	Specification
Weight	45 g (1.59 oz)
Operating temperature	–30°C to +70°C (–22°F to +158°F)

Table 9 WLAN antenna specifications

Item	Specification
Frequency range	2.4 GHz to 2.5 GHz
Voltage standing wave ratio (VSWR)	1.92:1
Input impedance	50 ohms
Gain	2 dBi
Max power consumption	1 W
Input interface	RSMA
Length	115 mm (4.53 in)
Color	Black
Weight	25 g (0.88 oz)
Operating temperature	–10°C to +60°C (14°F to 140°F)

Appendix B LEDs

LEDs

JG511A

Figure 65 Front panel LEDs

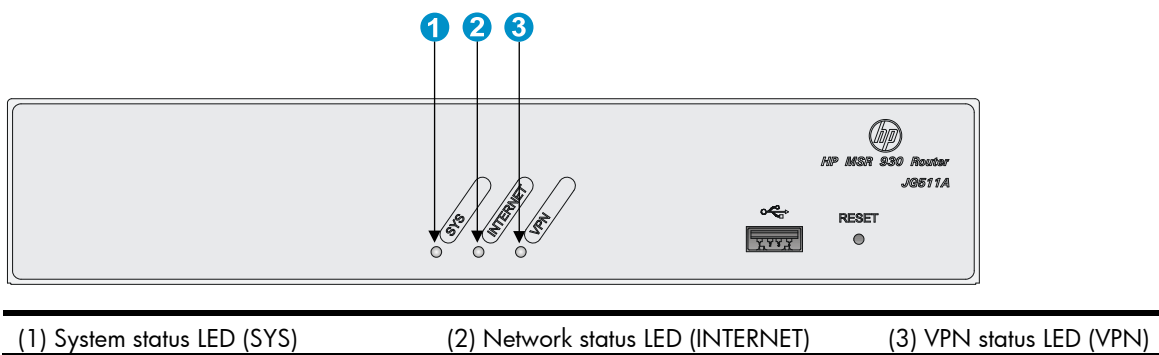
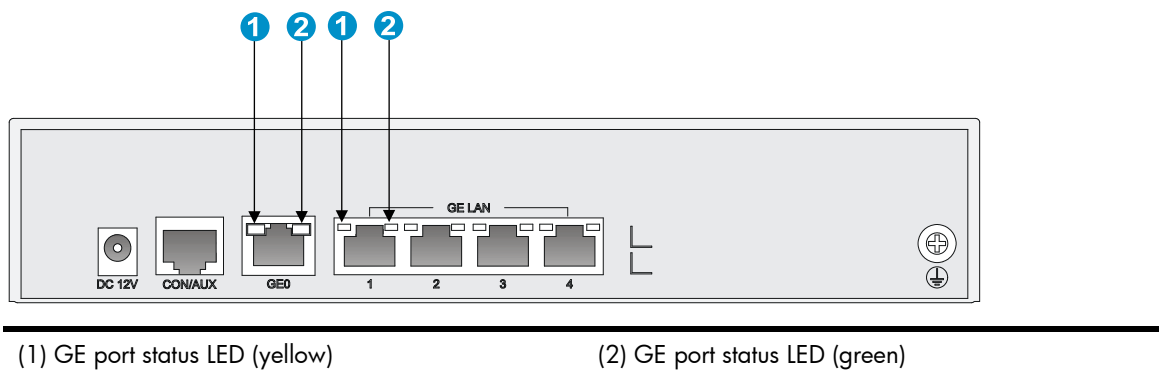


Figure 66 Rear panel LEDs



JG512A

Figure 67 Front panel LEDs

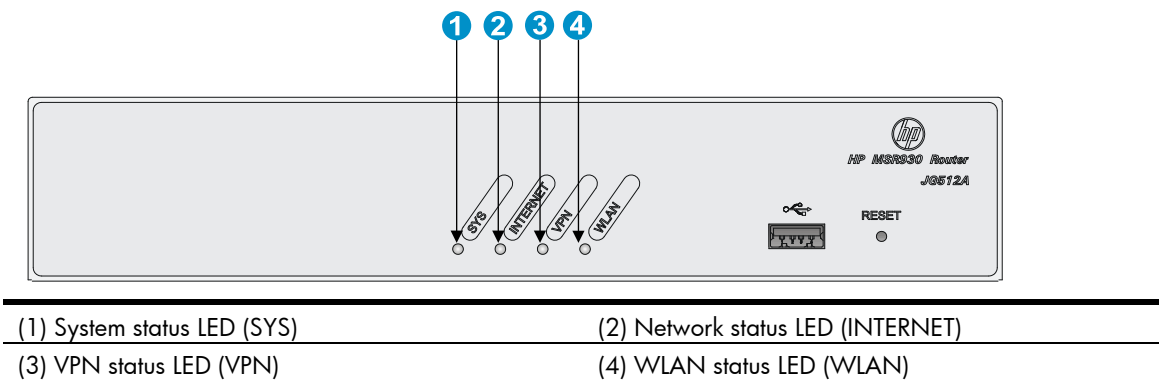
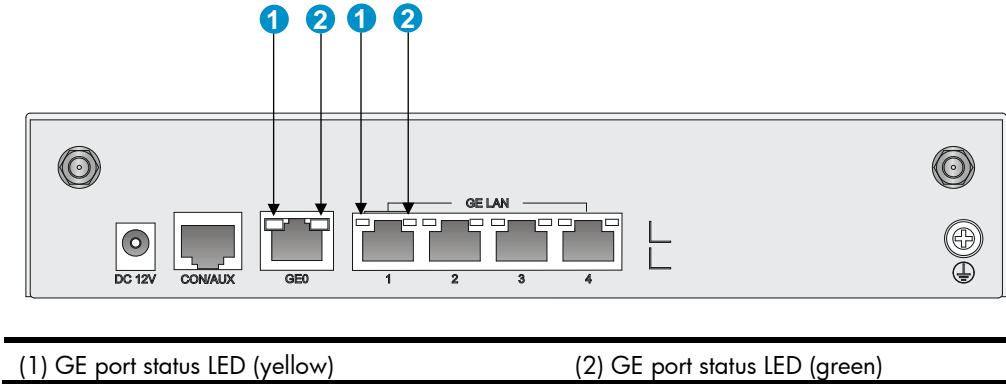


Figure 68 Rear panel LEDs



JH012A

Figure 69 Front panel LEDs

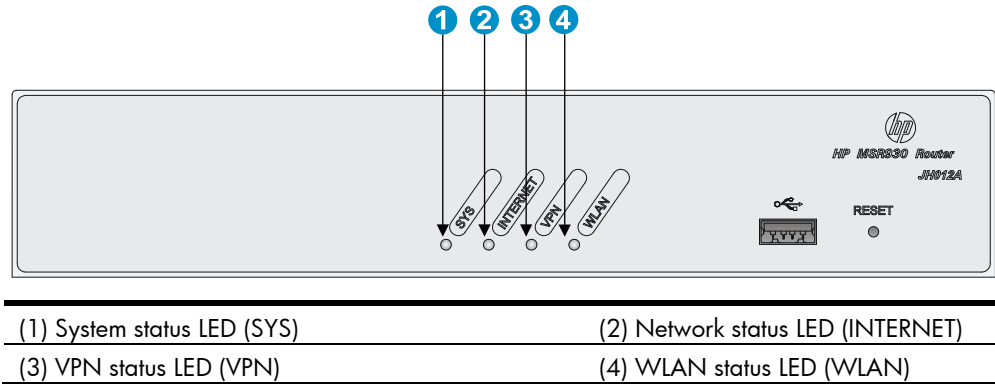
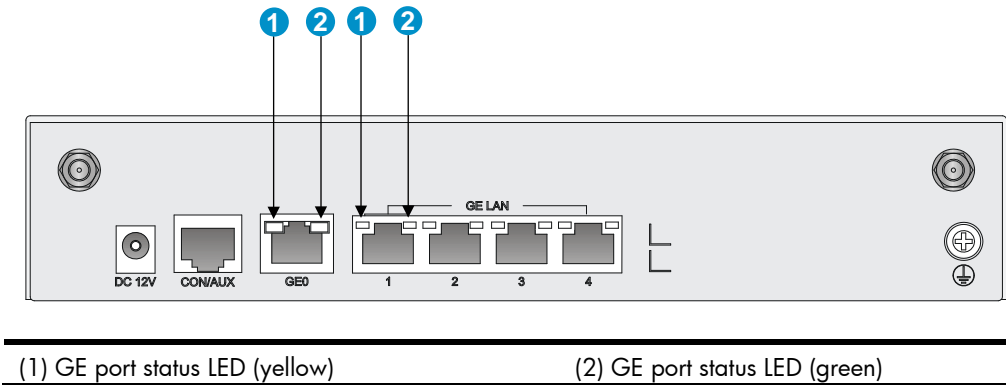
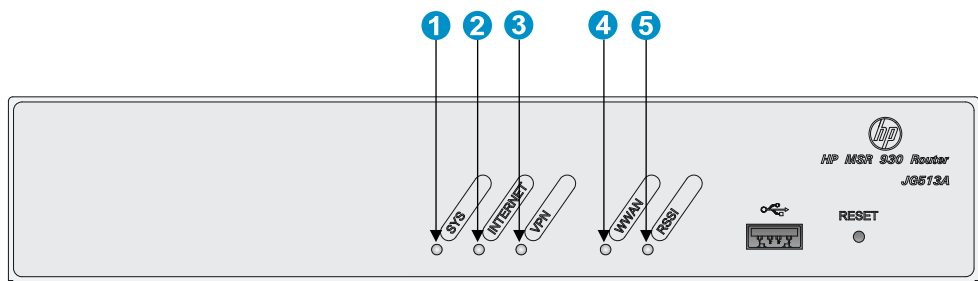


Figure 70 Rear panel LEDs



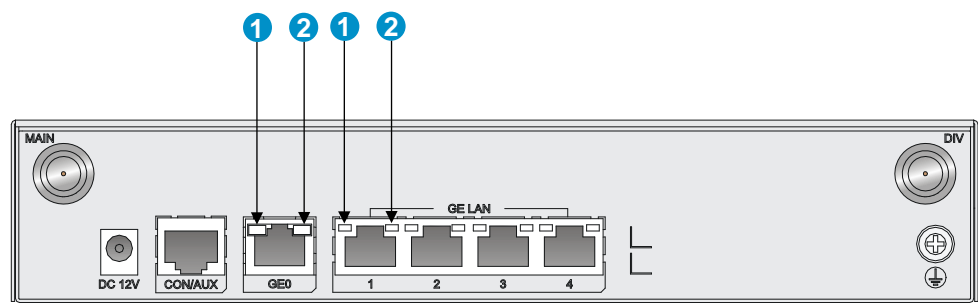
JG513A

Figure 71 Front panel LEDs



- | | | |
|-----------------------------|---|--------------------------|
| (1) System status LED (SYS) | (2) Network status LED (INTERNET) | (3) VPN status LED (VPN) |
| (3) 3G status LED (WWAN) | (4) Received 3G signal strength indication LED (RSSI) | |

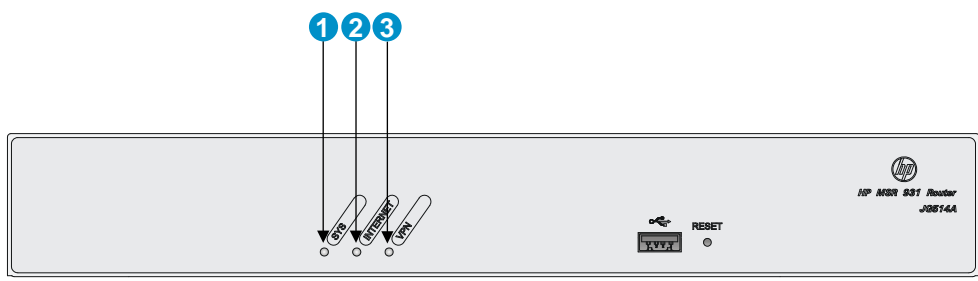
Figure 72 Rear panel LEDs



- | | |
|---------------------------------|--------------------------------|
| (1) GE port status LED (yellow) | (2) GE port status LED (green) |
|---------------------------------|--------------------------------|

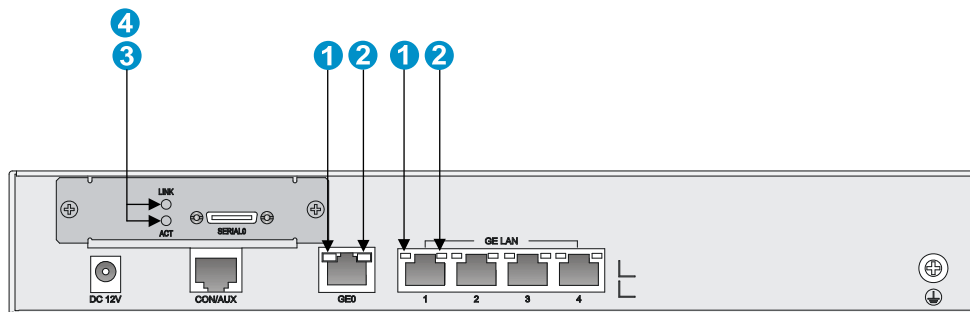
JG514A

Figure 73 Front panel LEDs



- | | | |
|-----------------------------|-----------------------------------|--------------------------|
| (1) System status LED (SYS) | (2) Network status LED (INTERNET) | (3) VPN status LED (VPN) |
|-----------------------------|-----------------------------------|--------------------------|

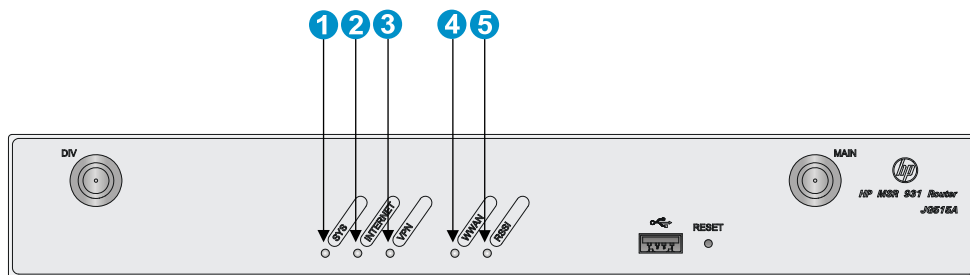
Figure 74 Rear panel LEDs



- | | |
|--|--|
| (1) GE port status LED (yellow) | (2) GE port status LED (green) |
| (3) Serial port data transmission status LED (ACT) | (4) Serial port link status LED (LINK) |

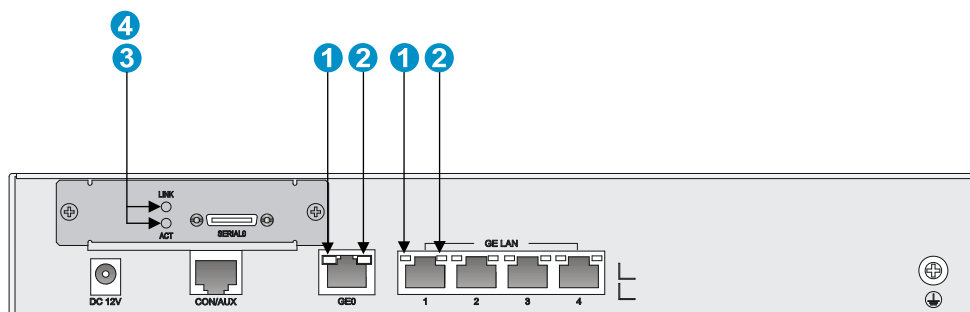
JG515A

Figure 75 Front panel LEDs



- | | | |
|-----------------------------|---|--------------------------|
| (1) System status LED (SYS) | (2) Network status LED (INTERNET) | (3) VPN status LED (VPN) |
| (4) 3G status LED (WWAN) | (5) Received 3G signal strength indication LED (RSSI) | |

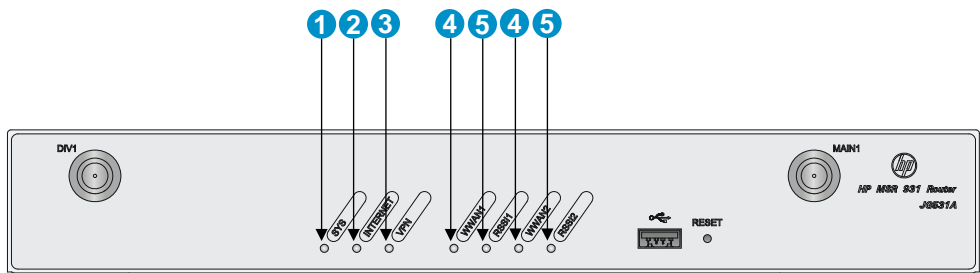
Figure 76 Rear panel LEDs



- | | |
|--|--|
| (1) GE port status LED (yellow) | (2) GE port status LED (green) |
| (3) Serial port data transmission status LED (ACT) | (4) Serial port link status LED (LINK) |

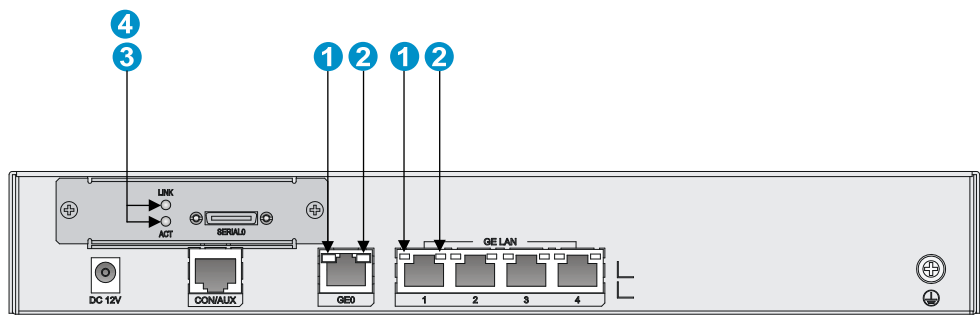
JG531A

Figure 77 Front panel LEDs



- | | | |
|-----------------------------|---|--------------------------|
| (1) System status LED (SYS) | (2) Network status LED (INTERNET) | (3) VPN status LED (VPN) |
| (4) 3G status LED (WWAN) | (5) Received 3G signal strength indication LED (RSSI) | |

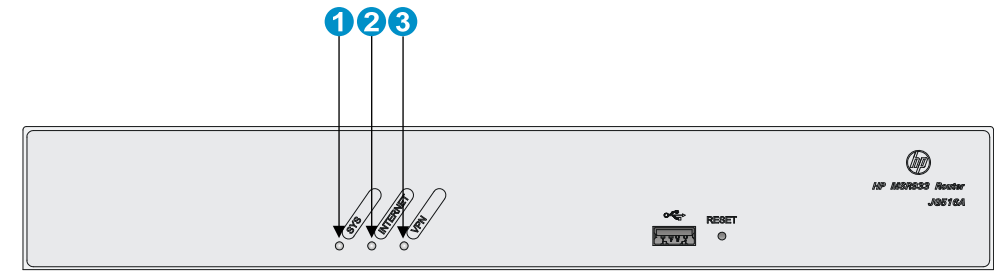
Figure 78 Rear panel LEDs



- | | |
|--|--|
| (1) GE port status LED (yellow) | (2) GE port status LED (green) |
| (3) Serial port data transmission status LED (ACT) | (4) Serial port link status LED (LINK) |

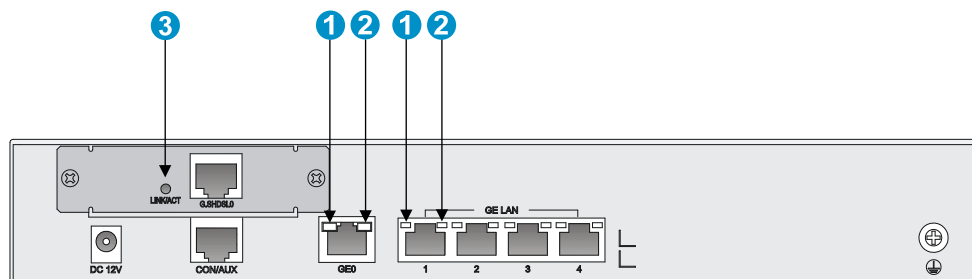
JG516A

Figure 79 Front panel LEDs



- | | | |
|-----------------------------|-----------------------------------|--------------------------|
| (1) System status LED (SYS) | (2) Network status LED (INTERNET) | (3) VPN status LED (VPN) |
|-----------------------------|-----------------------------------|--------------------------|

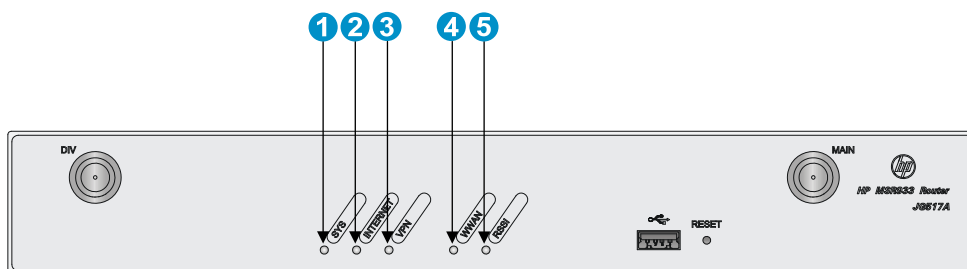
Figure 80 Rear panel LEDs



-
- (1) GE port status LED (yellow) (2) GE port status LED (green) (3) G.SHDSL port status LED
-

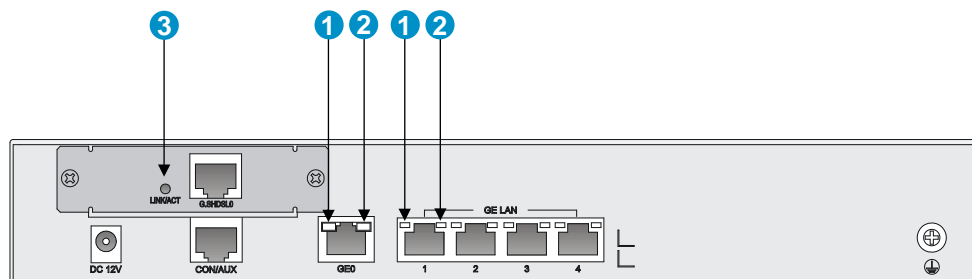
JG517A

Figure 81 Front panel LEDs



-
- (1) System status LED (SYS) (2) Network status LED (INTERNET) (3) VPN status LED (VPN)
 (4) 3G status LED (WWAN) (5) Received 3G signal strength indication LED (RSSI)
-

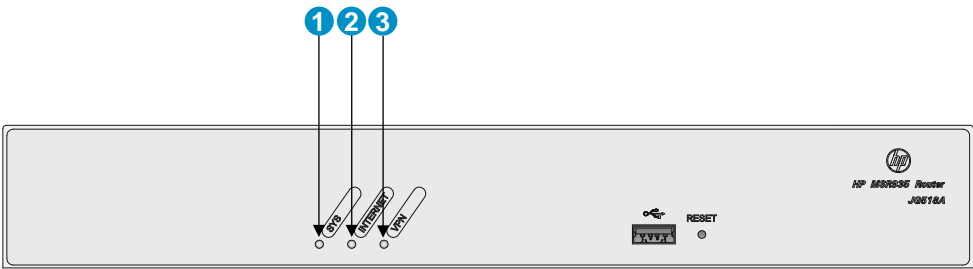
Figure 82 Rear panel LEDs



-
- (1) GE port status LED (yellow) (2) GE port status LED (green) (3) G.SHDSL port status LED
-

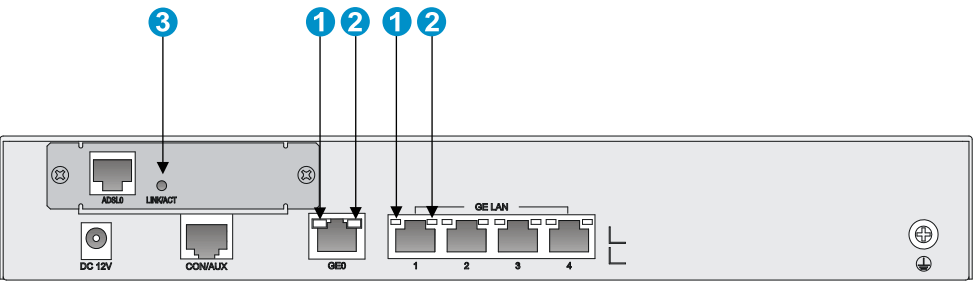
JG518A

Figure 83 Front panel LEDs



- | | | |
|-----------------------------|-----------------------------------|--------------------------|
| (1) System status LED (SYS) | (2) Network status LED (INTERNET) | (3) VPN status LED (VPN) |
|-----------------------------|-----------------------------------|--------------------------|

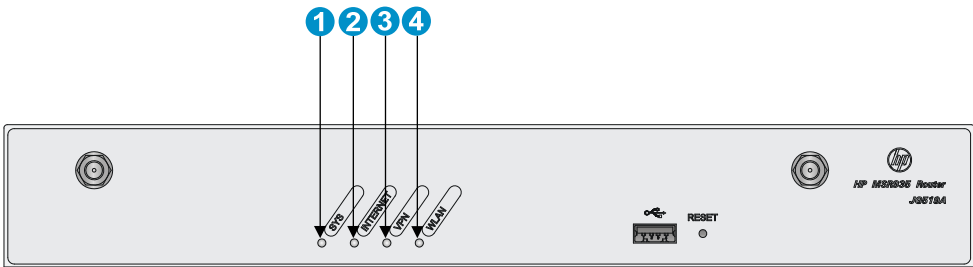
Figure 84 Rear panel LEDs



- | | | |
|---------------------------------|--------------------------------|--------------------------|
| (1) GE port status LED (yellow) | (2) GE port status LED (green) | (3) ADSL port status LED |
|---------------------------------|--------------------------------|--------------------------|

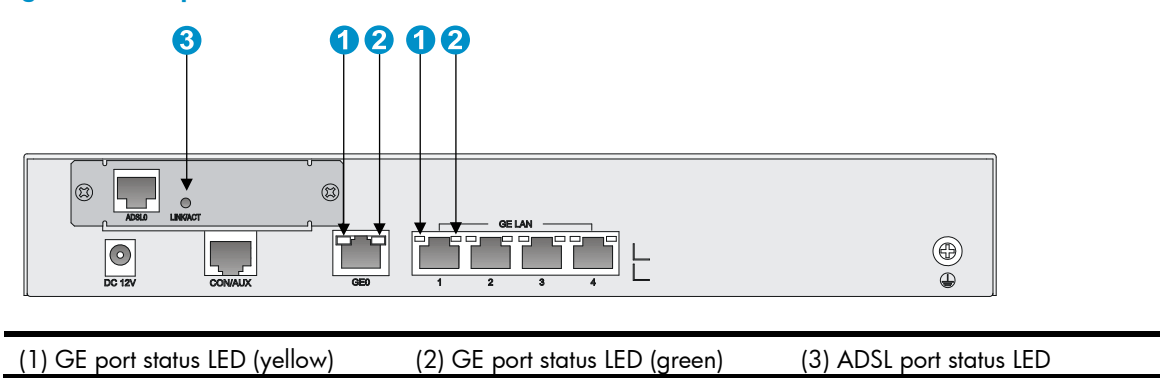
JG519A

Figure 85 Front panel LEDs



- | | |
|-----------------------------|-----------------------------------|
| (1) System status LED (SYS) | (2) Network status LED (INTERNET) |
| (3) VPN status LED (VPN) | (4) WLAN status LED (WLAN) |

Figure 86 Rear panel LEDs



JH013A

Figure 87 Front panel LEDs

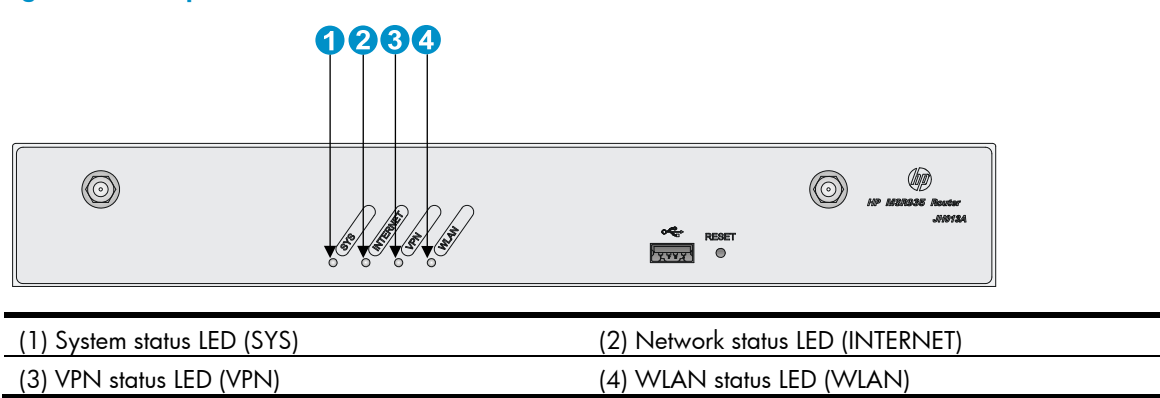
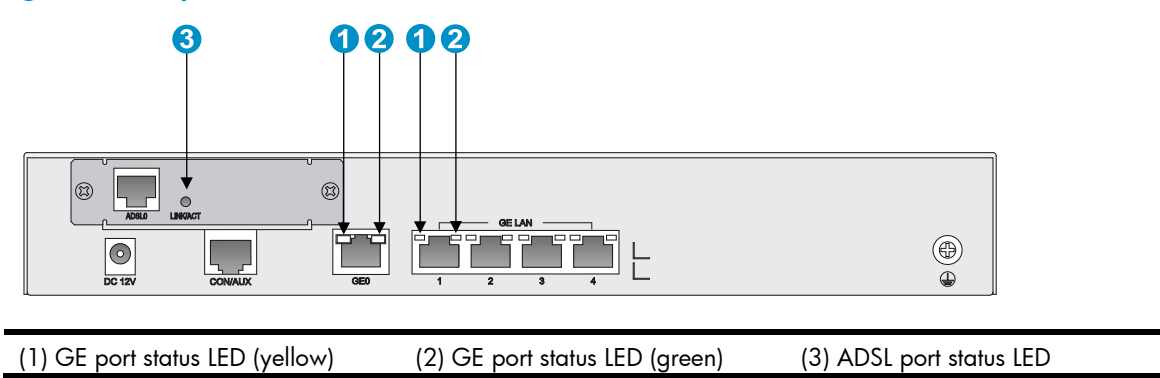
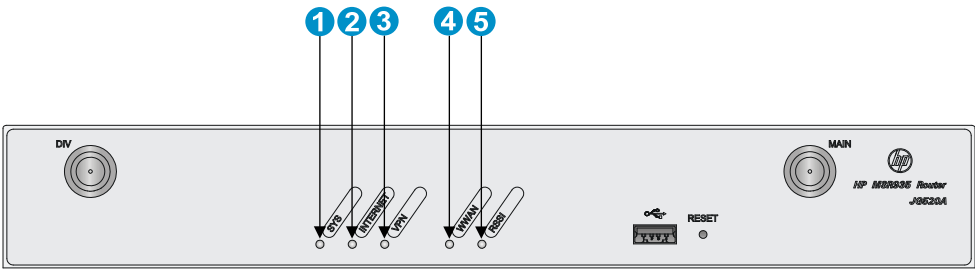


Figure 88 Rear panel LEDs



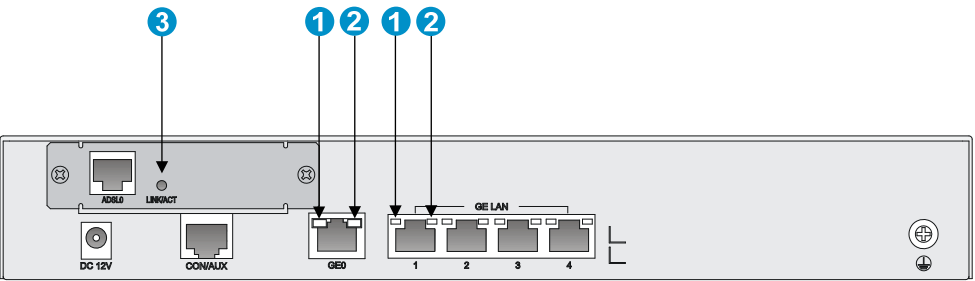
JG520A

Figure 89 Front panel LEDs



- | | | |
|-----------------------------|---|--------------------------|
| (1) System status LED (SYS) | (2) Network status LED (INTERNET) | (3) VPN status LED (VPN) |
| (4) 3G status LED (WWAN) | (5) Received 3G signal strength indication LED (RSSI) | |

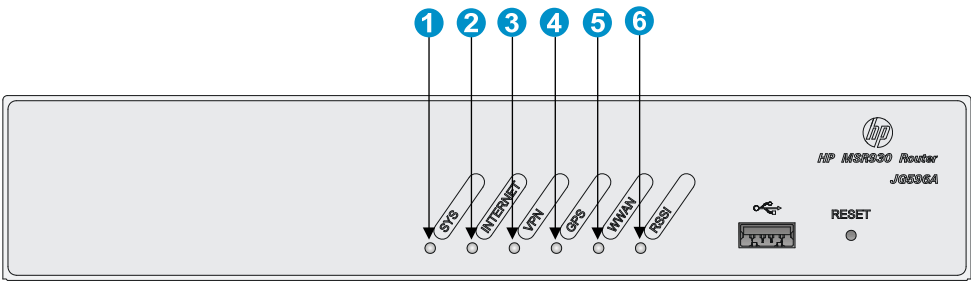
Figure 90 Rear panel LEDs



- | | | |
|---------------------------------|--------------------------------|--------------------------|
| (1) GE port status LED (yellow) | (2) GE port status LED (green) | (3) ADSL port status LED |
|---------------------------------|--------------------------------|--------------------------|

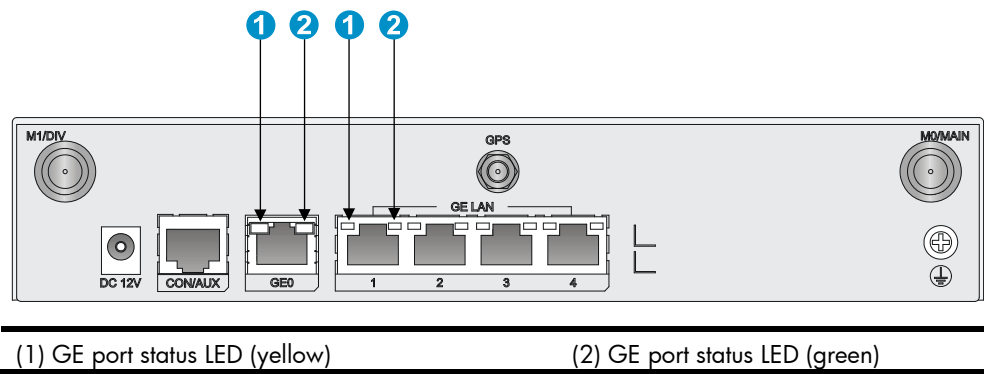
JG596A

Figure 91 Front panel LEDs



- | | | |
|-----------------------------|-----------------------------------|---|
| (1) System status LED (SYS) | (2) Network status LED (INTERNET) | (3) VPN status LED (VPN) |
| (4) GPS status LED (GPS) | (5) 4G status LED (WWAN) | (6) Received 4G signal strength indication LED (RSSI) |

Figure 92 Rear panel LEDs



JG665A

Figure 93 Front panel LEDs

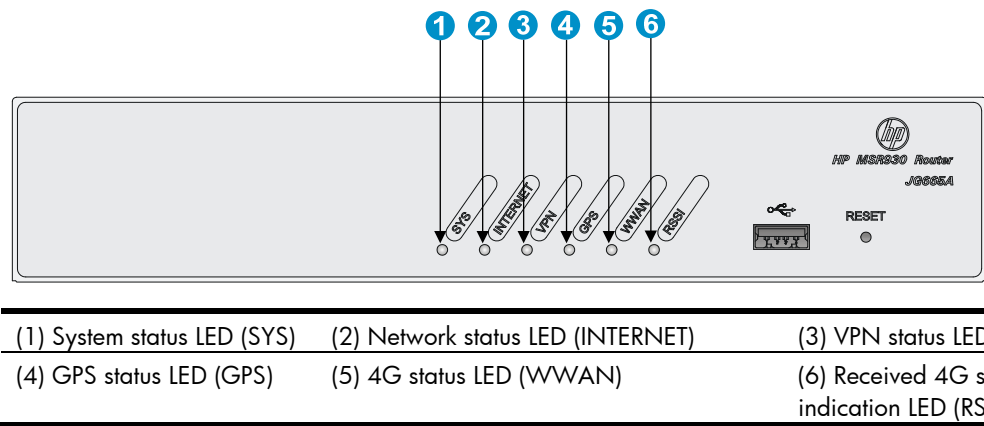
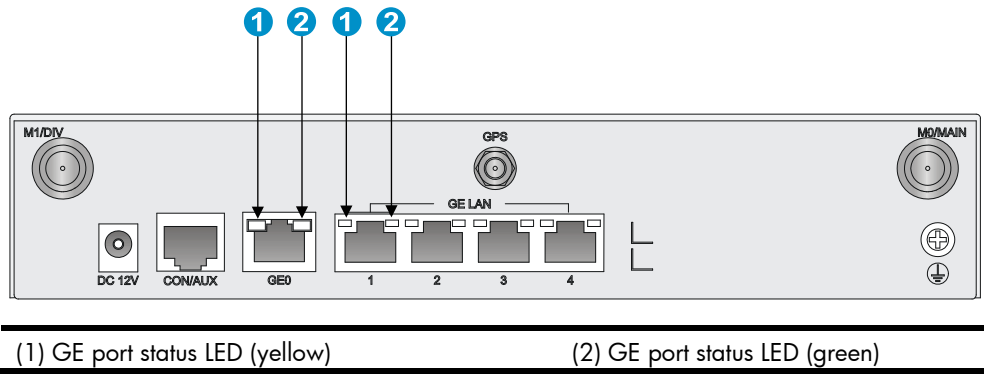
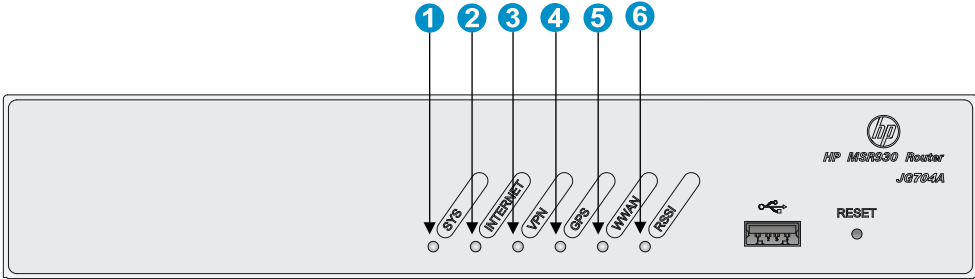


Figure 94 Rear panel LEDs



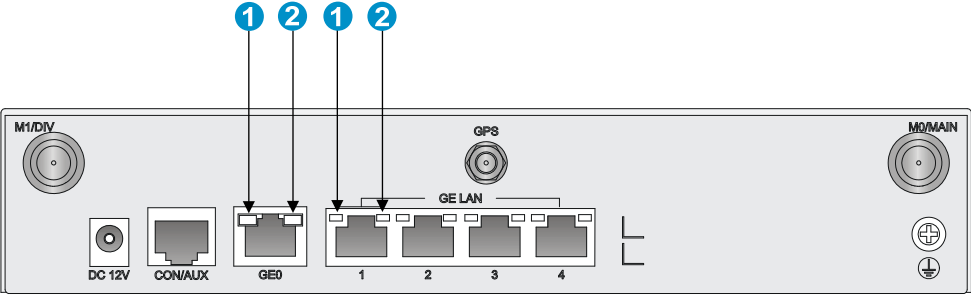
JG704A

Figure 95 Front panel LEDs



- | | | |
|-----------------------------|-----------------------------------|---|
| (1) System status LED (SYS) | (2) Network status LED (INTERNET) | (3) VPN status LED (VPN) |
| (4) GPS status LED (GPS) | (5) 4G status LED (WWAN) | (6) Received 4G signal strength indication LED (RSSI) |

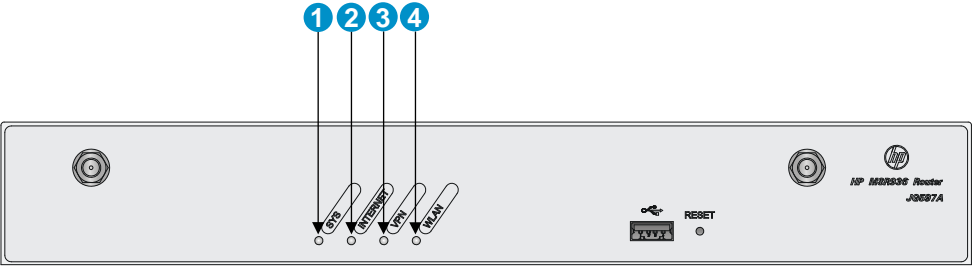
Figure 96 Rear panel LEDs



- | | |
|---------------------------------|--------------------------------|
| (1) GE port status LED (yellow) | (2) GE port status LED (green) |
|---------------------------------|--------------------------------|

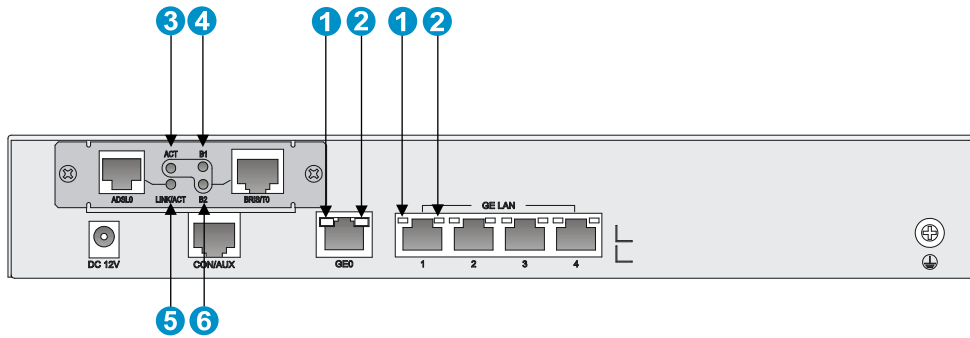
JG597A

Figure 97 Front panel LEDs



- | | |
|-----------------------------|-----------------------------------|
| (1) System status LED (SYS) | (2) Network status LED (INTERNET) |
| (3) VPN status LED (VPN) | (4) WLAN status LED (WLAN) |

Figure 98 Rear panel LEDs



(1) GE port status LED (yellow)	(2) GE port status LED (green)	(3) ISDN link status LED (ACT)
(4) ISDN B1 channel link status LED (B1)	(5) ADSL port status LED	(6) ISDN B2 channel link status LED (B2)

LED description

LED	Location	Status	Description
System status LED (SYS)	Front panel	Off	No power input, or exceptions have occurred on the MPU.
		Steady green	The SDRAM is performing self-test.
		Flashing green (8 Hz)	The system software image is being copied and decompressed.
		Flashing green (1 Hz)	Comware has started with the configuration file and the router has booted up.
		Flashing yellow (1 Hz)	The SDRAM has failed the self-test.
		Flashing yellow (8 Hz)	The extended segment does not exist.
		Steady yellow	The system software image does not exist.
Network status LED (INTERNET)	Front panel	Off	No PPP link is present.
		Steady green	A minimum of one PPP link is present.
VPN status LED (VPN)	Front panel	Off	No IPsec VPN tunnel is present.
		Steady green	A minimum of one IPsec VPN tunnel is present.
3G status LED (WWAN)	Front panel	Off	No link is present or no network is available.
		Steady green	The router has been connected to the wireless network and is operating in 3G mode.
		Flashing green (8 Hz)	Data is being received or transmitted. The router is operating in 3G mode.
		Steady yellow	The router has been connected to the wireless network and is operating in 2G mode.
		Flashing yellow (8 Hz)	Data is being received or transmitted. The router is operating in 2G mode.

LED	Location	Status	Description
Received 3G signal strength indication LED (RSSI)	Front panel	Off	Weak or no signal.
		Steady green	Strong signal.
		Flashing green (8 Hz)	Middle or low signal.
4G status LED (WWAN)	Front panel	Off	No link is present or a 2G network is available.
		Steady green	The router has been connected to the wireless network and is operating in 4G mode.
		Flashing green (8 Hz)	Data is being received or transmitted. The router is operating in 4G mode.
		Steady yellow	The router has been connected to the wireless network and is operating in 3G mode.
		Flashing yellow (8 Hz)	Data is being received or transmitted. The router is operating in 3G mode.
Received 4G signal strength indication LED (RSSI)	Front panel	Off	Weak or no signal.
		Steady green	Strong signal.
		Flashing green (8 Hz)	Middle or low signal.
WLAN status LED (WLAN)	Front panel	Off	The link is idle.
		Flashing green	Data is being transmitted or received on the link.
		Steady green	The WLAN-radio interface is up.
GE port status LED	Rear panel	Off	No link is present.
		Steady green	A 1000 Mbps link is present.
		Flashing green	Data is being received or transmitted at 1000 Mbps.
		Steady yellow	A 10/100 Mbps link is present.
		Flashing yellow	Data is being received or transmitted at 10/100 Mbps.
G.SHDSL port status LED	Rear panel	Off	No carrier signal is received.
		Steady green	A carrier signal has been received.
		Flashing green (8 Hz)	Data is being received or transmitted.
		Flashing green (1 Hz)	Link negotiation is in progress.
ADSL port status LED	Rear panel	Off	No ADSL link is present.
		Steady green	An ADSL link is present.
		Flashing green (8 Hz)	The ADSL link is in synchronization progress.
		Flashing green (4 Hz)	Data is being received or transmitted on the ADSL link.

LED	Location	Status	Description
ISDN link status LED (ACT)	Rear panel	Steady green	The ISDN link has been activated.
		Flashing green (8 Hz)	The ISDN link is being activated.
		Off	The ISDN link is not activated or no ISDN link is present.
ISDN B1 channel link status LED (B1)	Rear panel	Flashing green (8 Hz)	Data is being received or transmitted on the B1 channel.
		Off	No data is being received or transmitted on the B1 channel.
ISDN B2 channel link status LED (B2)	Rear panel	Flashing green (8 Hz)	Data is being received or transmitted on the B2 channel.
		Off	No data is being received or transmitted on the B2 channel.
Serial port link status LED (LINK)	Rear panel	Off	No link is present.
		Steady green	A link is present.
Serial port data transmission status LED (ACT)	Rear panel	Off	No data is being received or transmitted.
		Flashing yellow	Data is being received or transmitted.

Support and other resources

Contacting HP

For worldwide technical support information, see the HP support website:

<http://www.hp.com/support>

Before contacting HP, collect the following information:

- Product model names and numbers
- Technical support registration number (if applicable)
- Product serial numbers
- Error messages
- Operating system type and revision level
- Detailed questions

Subscription service

HP recommends that you register your product at the Subscriber's Choice for Business website:

<http://www.hp.com/go/wwalerts>

After registering, you will receive email notification of product enhancements, new driver versions, firmware updates, and other product resources.

Related information

Documents

To find related documents, browse to the Manuals page of the HP Business Support Center website:

<http://www.hp.com/support/manuals>

- For related documentation, navigate to the Networking section, and select a networking category.
- For a complete list of acronyms and their definitions, see *HP FlexNetwork Technology Acronyms*.

Websites

- HP.com <http://www.hp.com>
- HP Networking <http://www.hp.com/go/networking>
- HP manuals <http://www.hp.com/support/manuals>
- HP download drivers and software <http://www.hp.com/support/downloads>
- HP software depot <http://www.software.hp.com>
- HP Education <http://www.hp.com/learn>

Conventions

This section describes the conventions used in this documentation set.





Command conventions

Convention	Description
Boldface	Bold text represents commands and keywords that you enter literally as shown.
<i>Italic</i>	<i>Italic</i> text represents arguments that you replace with actual values.
[]	Square brackets enclose syntax choices (keywords or arguments) that are optional.
{ x y ... }	Braces enclose a set of required syntax choices separated by vertical bars, from which you select one.
[x y ...]	Square brackets enclose a set of optional syntax choices separated by vertical bars, from which you select one or none.
{ x y ... } *	Asterisk-marked braces enclose a set of required syntax choices separated by vertical bars, from which you select at least one.
[x y ...] *	Asterisk-marked square brackets enclose optional syntax choices separated by vertical bars, from which you select one choice, multiple choices, or none.
&<1-n>	The argument or keyword and argument combination before the ampersand (&) sign can be entered 1 to n times.
#	A line that starts with a pound (#) sign is comments.

GUI conventions

Convention	Description
Boldface	Window names, button names, field names, and menu items are in bold text. For example, the New User window appears; click OK .
>	Multi-level menus are separated by angle brackets. For example, File > Create > Folder .

Symbols

Convention	Description
 WARNING	An alert that calls attention to important information that if not understood or followed can result in personal injury.
 CAUTION	An alert that calls attention to important information that if not understood or followed can result in data loss, data corruption, or damage to hardware or software.
 IMPORTANT	An alert that calls attention to essential information.
NOTE	An alert that contains additional or supplementary information.
 TIP	An alert that provides helpful information.

Network topology icons



Represents a generic network device, such as a router, switch, or firewall.



Represents a routing-capable device, such as a router or Layer 3 switch.



Represents a generic switch, such as a Layer 2 or Layer 3 switch, or a router that supports Layer 2 forwarding and other Layer 2 features.

Port numbering in examples

The port numbers in this document are for illustration only and might be unavailable on your device.

Index

[C](#) [D](#) [E](#) [G](#) [I](#) [J](#) [L](#) [M](#) [N](#) [P](#) [R](#) [S](#) [U](#) [V](#) [W](#)

C

- Configuring basic settings for the router, [25](#)
- Connecting interface cables, [18](#)
- Connecting the console cable and setting terminal parameters, [19](#)
- Connecting the power adapter, [22](#)

D

- Documents, [59](#)

E

- EMI, [3](#)
- ESD prevention, [2](#)

G

- Garbled terminal display, [26](#)
- Grounding the router, [8](#)

I

- Installing a 3G antenna, [11](#)
- Installing a 3G/4G antenna extender cable to a 4G device, [16](#)
- Installing a 4G antenna, [16](#)
- Installing a GPS antenna, [17](#)
- Installing a standard 3G SIM card, [9](#)
- Installing a standard 4G SIM card, [13](#)
- Installing the router on a wall, [7](#)
- Installing WLAN antennas, [13](#)

J

- JG511A, [45](#)
- JG511A, [30](#)
- JG512A, [31](#)
- JG512A, [45](#)
- JG513A, [32](#)
- JG513A, [47](#)
- JG514A, [47](#)
- JG514A, [33](#)
- JG515A, [33](#)
- JG515A, [48](#)

- JG516A, [49](#)
- JG516A, [35](#)
- JG517A, [35](#)
- JG517A, [50](#)
- JG518A, [36](#)
- JG518A, [51](#)
- JG519A, [37](#)
- JG519A, [51](#)
- JG520A, [53](#)
- JG520A, [38](#)
- JG531A, [49](#)
- JG531A, [34](#)
- JG596A, [39](#)
- JG596A, [53](#)
- JG597A, [55](#)
- JG597A, [41](#)
- JG665A, [54](#)
- JG665A, [39](#)
- JG704A, [55](#)
- JG704A, [40](#)
- JG704A router antenna installation instructions, [17](#)
- JH012A, [31](#)
- JH012A, [46](#)
- JH013A, [37](#)
- JH013A, [52](#)

L

- Lightning protection, [3](#)

M

- Mounting the router on a workbench, [6](#)

N

- No response from the serial port, [27](#)
- No terminal display, [26](#)

P

- Power-on check, [24](#)

R

- Reset button usage guidelines, [29](#)

S

- Scenario 1, [28](#)
- Scenario 2, [29](#)
- Scenario 3, [29](#)
- Setting console terminal parameters, [19](#)
- Startup process, [23](#)
- Subscription service, [59](#)
- Super password loss, [27](#)

U

- User password loss, [27](#)

V

- Verifying the installation, [23](#)

W

- Websites, [59](#)